

Final results 2019

RENISHAW plc

1 August 2019

Preliminary announcement of results for the year ended 30 June 2019

Summary

- Revenue of £574.0m, a decrease at constant exchange rates of 7%
- Revenue growth in the Americas and EMEA regions; weakness in the APAC region (19% decrease at constant exchange rates*)
- Metrology revenue decreased by 7% to £532.9m, largely as a result of a slowdown in demand for encoder and machine tool products in the APAC region
- Metrology revenue benefited from strong growth in our additive manufacturing line and good growth in our measurement and automation line (Equator gauging systems) and fixturing line
- Healthcare revenue increased by 15% with strong growth in our spectroscopy and medical dental product lines giving rise to Adjusted operating profits of £3.1m (2018: £0.3m)
- Adjusted* profit before tax of £103.9m (2018: £145.1m), a decrease of 28%
- Statutory profit decreased by 29% to £109.9m (2018: £155.2m)
- Strong balance sheet, with cash of £106.8m, compared with £103.8m last year
- Recommended final dividend of 46p per share; total dividend for the year of 60p (2018: 60p)

	2019	2018	Change
Revenue (£m)	574.0	611.5	-6%
Adjusted* profit before tax (£m)	103.9	145.1	-28%
Adjusted* earnings per share (pence)	119.9	170.5	-30%
Dividend per share (pence)	60.0	60.0	
STATUTORY			
Profit before tax (£m)	109.9	155.2	-29%
Earnings per share (pence)	126.7	181.8	-30%

*Note 25, 'Alternative performance measures', defines how adjusted profit before tax, adjusted earnings per share, adjusted operating profit and revenue at constant exchange rates are calculated.

CHAIRMAN'S STATEMENT

Introduction

I am pleased to report our 2019 results. We achieved a turnover for the year of £574.0m (2018: £611.5m) with a decrease in revenue of 7% at constant exchange rates*, against a backdrop of challenging economic conditions. Adjusted* profit before tax amounted to £103.9m (2018: £145.1m), a decrease of 28%.

Following the appointment of Will Lee as Chief Executive last year, I have been delighted to see his progress and strong leadership during the year. He is driving change in key areas of the business, including a focus on the skills development of our people, to continue to improve productivity.

Innovation drives our business, from the generation of new technologies to new manufacturing processes. In my role as Executive Chairman, I have enjoyed the opportunity to focus on Group innovation and product strategy, supporting our talented engineering teams. This has included our industrial metrology and additive manufacturing technologies, where there are exciting opportunities for future growth.

During the year, we continued to invest in developing future technologies, with total engineering costs of £97.9m (before net capitalised development costs and the R&D (research and development) tax credit), amounting to 17% of total revenue.

Board changes

On 30 June 2019, Geoff McFarland, Group Engineering Director, resigned as a Director of the Board for family reasons. On behalf of the Board, I would like to thank Geoff for the invaluable contribution he has already made to the developments that have helped Renishaw grow into the global technology leader that it is today. I look forward to continuing to work with him in his new role as Director of Group Technology, reporting to Will.

As reported last year, Kath Durrant stepped down from the Board on 31 July 2018. Catherine Glickman joined us as an Independent Non-executive Director on 1 August 2018, becoming Chair of the Remuneration Committee and a member of the Audit and Nomination Committees. Catherine previously held the role of Group HR Director at Genus plc and Tesco PLC and is making a valuable contribution as we strengthen our HR processes and implement a new internal communications and employee engagement strategy.

People, culture and values

We thrive through our collaborative team of 5,000 people. They bring fresh thinking, deep experience and an obsession with quality to every aspect of their work. On behalf of the Board, I would like to thank them all for their professionalism and dedication during the year.

We have created a culture that aims to allow our employees to maximise their potential. We work hard to encourage open communication and innovative thinking and believe everyone in our business should feel valued and be able to grow.

Innovation is at the heart of everything that we do and is one of our core values. We believe our people are fundamental to our disruptive thinking and manufacturing excellence which helps our customers to increase their own innovation, improve quality, expand output and enhance efficiency.

Integrity is another of our core values and is key to the relationships that we have with our people, customers, suppliers, communities and other stakeholders. We strive at all times to be open, honest and consistent.

We are also focused on diversity at all levels. During the year we published our second Gender Pay Gap report. While progress has been made, we and our industry still have much work to do in this area. Our educational outreach programmes engage with children from primary school age onwards to encourage more young people from diverse gender, ethnic and economic backgrounds into the sector.

Corporate governance

The Board is committed to the highest standards of corporate governance to protect our business and its long-term success. The Board has already started to consider the new 2018 UK Corporate Governance Code and steps have been taken to start implementing its requirements.

Investor communications

Our sixth annual investor day on 14 May 2019 was attended by a record 150 people, with an equal mix of private and institutional investors. The day included presentations on Group strategy, industry sectors and key sales regions, as well as demonstrations, opportunities to meet the Board and senior management, and a question and answer (Q&A) session with Board members. Following the event, we conducted a survey with all the attendees to gather further feedback.

The event is one of four key touchpoints across the year where the investment community can learn more about Renishaw's business and strategy, with the Annual General Meeting (AGM) in October, plus live half-year and full-year webcasts.

UK defined benefit pension scheme

Following further engagement with The Pensions Regulator, the Company and trustees have agreed the terms

of a new deficit funding plan for the Company's UK defined benefit pension scheme. The Company has agreed to pay £8.7m per annum into the scheme for five years with effect from 1 October 2018. Under the terms of the previous agreement the Company paid approximately £4m per year.

Dividend

A final dividend of 46.0p net per share will be paid on 31 October 2019, to shareholders on the register at 27 September 2019, giving a total dividend of 60.0p for the year (2018: 60.0p).

Sir David McMurtry
Executive Chairman

* Note 25, Alternative performance measures, defines how Adjusted profit before tax, Adjusted earnings per share, Adjusted operating profit and Revenue at constant exchange rates are calculated.

CHIEF EXECUTIVE'S REVIEW

Introduction

As stated last year, my role is to build on the strong heritage and culture developed by our co-founders, Sir David McMurtry and John Deer, and inspire our people to meet the opportunities and challenges of a changing business environment. During my first full year I have travelled widely within the Group, spending time with our R&D teams, visiting our sales regions, attending trade exhibitions, and listening to what people feel is good about Renishaw and where we can make improvements. This has given me a clear sense of where we need to focus to continue to be a technology world leader that is trusted by our customers and suppliers, and an employer that inspires its people.

Performance overview

As Sir David has already outlined, this was a challenging year with reduced turnover and Adjusted* operating profit for the Group. However, outside APAC, our other regions saw strong growth for some of our product lines, including the additive manufacturing (AM) and spectroscopy lines. We remain focused on the long term with a key focus on developing technologies that provide patented products to support the strategies for our metrology and healthcare segments.

Revenue

We achieved revenue for the year ended 30 June 2019 of £574.0m, compared with £611.5m last year, against a backdrop of challenging economic conditions including the impact of trade tensions between the USA and China, and ongoing uncertainty surrounding the potential impacts of Brexit. Aside from APAC, we experienced revenue growth in all regions as set out below. The lower revenue in the APAC region is largely a result of a slowdown in demand for our encoder products, which are used in electronics and display manufacturing equipment, and for our machine tool products from large end-user manufacturers of consumer electronic products, due to weaker smartphone demand and the resultant over-capacity in the supply chain. We have not experienced an erosion in our customer base in the region and we continue to work closely with key customers to ensure we are in position to meet their requirements when economic conditions improve.

	2019 £m	2018 £m	Change %	Constant fx change %
APAC	240.1	289.2	-17	-19
EMEA	167.2	165.1	1	2
Americas	132.6	126.6	5	1
UK	34.1	30.6	11	11
Total Group revenue	574.0	611.5	-6	-7

Profit and earnings per share

The Group's Adjusted* profit before tax for the year was £103.9m compared with £145.1m last year. Adjusted* earnings per share on continuing activities was 119.9p compared with 170.5p last year.

Statutory profit before tax for the year was £109.9m compared with £155.2m last year. Statutory earnings per share on continuing activities was 126.7p compared with 181.8p last year.

This year's tax charge on continuing operations amounts to £17.7m (2018: £22.9m) representing a tax rate of 16.1% (2018: 14.7%). Lower profits in the UK in the current year resulted in a fall in the patent box benefit of

£3.9m relative to the previous year, which is the principal factor for the increase in the effective tax rate.

Metrology

Revenue from our metrology business for the year was £532.9m compared with £575.8m last year. There was strong growth in our AM product line; good growth in our measurement and automation line (Equator gauging systems) and in our fixturing line - reflecting pleasing progress in our end-user focused solutions business. We continue to focus on ensuring that our AM systems satisfy the demands of our customers for the series production of metal components. As previously mentioned, we have seen a slowdown in demand for our encoder products and from large end-user manufacturers of consumer electronic products, which primarily impacts the machine tool revenue.

The geographical analysis of metrology revenue is set out below.

	2019 £m	2018 £m	Change %
APAC	223.7	276.7	-19
EMEA	153.0	153.9	-1
Americas	126.6	119.7	6
UK	29.6	25.5	16
Total metrology revenue	532.9	575.8	-7

Adjusted* operating profit for our metrology business was £90.6m (2018: £142.8m).

We continued to invest in R&D, with total engineering costs of £90.7m (before net capitalised development costs and the R&D tax credit) compared with £77.1m in 2018.

A range of new products were launched during the year. The PHS-2 second generation servo positioning head for CMMs is used within the automotive market for body-in-white measurement. We also introduced new calibration products including the XM-600 calibration system for high-speed dynamic CMM error-mapping and fault-finding, and the XK10 alignment laser system for use during the build and alignment of machine tools, replacing the need for artefacts.

The APCA-45 tool setting probe is designed for the very harsh environments surrounding lathes and multi-tasking machine tools, while the new SupaScan QuickPoint macro software package allows superfast probing cycles in machining applications with very short cycle times.

For the motion control market we launched a rotary encoder for our QUANTiC™ family of incremental encoders, while for high-end XY stages that require multiple interferometer feedback axes, our new multi-axis periscope (RMAP) enables accurate six degrees of freedom measurements.

Healthcare

Revenue from our healthcare business for the year was £41.0m, an increase of 15% over the £35.7m last year. There was strong growth in our spectroscopy and medical dental product lines.

There was an Adjusted* operating profit of £3.1m, compared with £0.3m last year, with two years of continuous profit achieved for the first time. Healthcare also saw continued investment in R&D, with total engineering costs in this business segment of £7.2m (before net capitalised development costs and the R&D tax credit) compared with £6.5m in 2018.

New products launched during the year include the RA816 Biological Analyser, a compact benchtop Raman imaging system designed exclusively for biological and clinical research, and the new neurolocate™ 2D module, which requires just two X-rays to register patient position against the neuromate® robot, also obtained a CE mark.

The results of a pioneering clinical trial for which Renishaw manufactured a drug delivery device on behalf of North Bristol NHS Trust, to administer Glial Cell Line-Derived Neurotrophic Factor (GDNF), were made public in February. The results showed that the drug delivery system performed effectively and reliably, and a similar device developed by Renishaw, called neuroinfuse, is now being used in another clinical trial.

Strategy and markets

Our strategy is fundamentally based on long-term investments in patented and innovative products and processes, high-quality manufacturing, and the provision of excellent local support to customers in all our markets around the globe. This strategy is consistent across all the product lines and market sectors in which we operate

to deliver our purpose.

Renishaw has moved in recent years, from primarily being a supplier of products to capital equipment manufacturers, to working closely with end-users to solve their complex challenges and deliver solutions and systems that transform their manufacturing capabilities. This is helping to build brand loyalty and opening up new revenue opportunities.

At the same time, we are seeing external market growth drivers – including global skills shortages, digitisation, requirements for more capable products, rising energy costs, a focus on reducing emissions and waste, population growth and rising life expectancy – that are creating positive opportunities for our business.

We continue to spread risk through the diversification of our applications for product lines, our customer base and our routes to market.

Focused investment for long-term growth

The Group firmly believes in its long-term strategy of investing for the future, expanding our global marketing and distribution infrastructure, along with increasing manufacturing capacity and R&D activities. However, with the current global economic uncertainties, our focus for the near-term is on maximising the benefits of the investment we have made over the past few years.

We are also investing in a new human resources (HR) system and development programmes for our people, which we believe, will ultimately boost our productivity.

Capital expenditure on property, plant and equipment and vehicles for the year was £56.8m (2018: £34.9m), of which £25.4m (2018: £10.0m) was spent on property and £31.4m (2018: £24.9m) on plant and equipment and vehicles.

This year saw the commencement of a 94,000 sq ft extension to the Innovation Centre at our New Mills site, the purchase of a new property in Nagoya to support the expansion of our Japanese distribution function, the purchase of land near São Paulo for the future development of a distribution facility in Brazil and the purchase of our existing building in The Netherlands for our Benelux operation.

Working capital

Group inventory increased from £110.6m at the start of the year to £129.0m, primarily reflecting the impact of Brexit contingency preparations and the reduced demand we experienced in the second half of the financial year. We continue to focus on working capital management while remaining committed to our policy of holding sufficient finished inventory to ensure customer delivery performance, given our short order book. Trade receivables decreased from £154.6m to £123.2m, with debtor days outstanding at the end of the current year at 73 days (2018: 69 days).

Net cash balances at 30 June 2019 were £106.8m, compared with £103.8m at 30 June 2018. Additionally, there is an escrow account of £10.5m (2018: £10.4m) relating to the provision of security to the UK defined benefit pension scheme.

Corporate social responsibility

As a socially responsible business, we recognise the importance of operating in a way that delivers long-term sustainable value for all stakeholders. This year we have: increased investment in developing the skills of our employees; assisted local organisations through charitable donations; reached more than 10,000 children with our educational outreach programmes and donated more than 10,000 hours of paid time to educational and other local organisations; recruited a record number of apprentices on our training schemes; reduced our greenhouse gas (GHG) emissions by 15%; and reduced our accident frequency rate to 24.67.

Our people

Our workforce at the end of June 2019 was 5,041 (2018: 4,862) an increase of 4%. During the year, 119 apprentices and graduates were taken on as part of our ongoing commitment to train and develop skilled resource for the Group in the future. We also took on 73 new paid industrial and summer placements in the year.

In January 2019, we carried out an extensive UK Employee Engagement survey. The results clearly showed that our people believe Renishaw makes a positive impact on society, they have pride in their roles, treat each other with respect and believe that the business acts in a socially responsible manner. They also told us we need to focus more on career development, including progression opportunities, be clearer on performance assessment and improve the way we recognise and ensure people feel valued. This fully validates the HR initiatives we introduced during the year, including a renewed focus on learning and development, and leadership and management training.

I would like to express my thanks to all employees for their invaluable contribution to the success of the Group during the year.

Brexit

The Board continues to oversee the work of the Brexit steering group in identifying the key risks arising from a no-deal Brexit scenario and implementing mitigation plans.

These activities significantly increased in the period leading up to the original Brexit deadline of March 2019 and included the following:

- the establishment of a new distribution warehouse in Ireland which, if required, would significantly reduce the number of direct shipments between the UK and the EU post Brexit;
- a general increase in inventory of certain components and finished goods held at our various sites within the EU and the UK; and
- continued ongoing assessment and updating of other key issues arising from Brexit and the mitigations against any possible negative impacts.

The steering group will continue to carefully monitor ongoing developments in the Brexit process and consider the impact of these against our current plans as the situation develops in the coming months.

Outlook

The Group is in a strong financial position, despite a challenging year, and continues to invest in the development of new products and applications, along with targeted investment in production, and sales and marketing facilities around the world. With the ongoing uncertainty surrounding Brexit, weaker economic indicators, exchange rate volatility and trade tensions between the USA and China, we expect market conditions to remain difficult throughout this financial year.

Your Directors remain confident in the long-term prospects for the Group due to the high quality of our people, our innovative product pipeline, extensive global sales and marketing presence and relevance to high-value manufacturing.

Will Lee

Chief Executive

* Note 25, Alternative performance measures, defines how Adjusted profit before tax, Adjusted earnings per share, Adjusted operating profit and Revenue at constant exchange rates are calculated.

FINANCIAL REVIEW

Overview

We have achieved revenue amounting to £574.0m and Adjusted profit before tax of £103.9m. Statutory profit before tax was £109.9m. We have a strong balance sheet with total equity growing by £34.7m to £583.3m, with net cash balances of £106.8m (2018: £103.8m). In line with our progressive dividend policy, the Board is proposing an unchanged dividend of 60.0p per share for the year.

Revenue

We achieved revenue for the year of £574.0m, compared with £611.5m last year. This fall is largely a result of a slowdown in demand for our encoder products and from large end-user manufacturers of consumer electronic products, primarily driven by economic uncertainty in the APAC region. The table below shows the analysis of Group revenue by geographical market.

In our metrology business segment, revenue was £532.9m, compared with £575.8m last year. Revenue in our healthcare business segment increased by 15% from £35.7m last year to £41.0m.

Revenue analysis by region

	2019 £m	2018 £m	Change %	Constant fx change %
APAC	240.1	289.2	-17	-19
EMEA	167.2	165.1	1	2
Americas	132.6	126.6	5	1
UK	34.1	30.6	11	11
Total Group revenue	574.0	611.5	-6	-7

Profit and tax

The adjusted profit before tax amounted to £103.9m compared with £145.1m in 2018. Statutory profit before tax was £109.9m compared with £155.2m in the previous year.

In our metrology business, Adjusted operating profit was £90.6m, compared with £142.8m last year. I am pleased to report further growth in our healthcare business, with an adjusted operating profit of £3.1m compared with £0.3m last year.

The overall effective rate of tax on continuing operations was 16.1% (2018: 14.7%). The Group operates in many countries around the world and the overall effective tax rate is a result of the combination of the varying tax rates applicable throughout these countries. Lower profits in the UK in the current year resulted in a fall in the patent box benefit to £1.8m (2018: £5.7m) and is the principal factor for the increase in the overall effective tax rate. Note 8 provides further analysis of the effective tax rate.

Alternative performance measures

In 2017, the Board introduced alternative performance measures (Adjusted profit before tax, Adjusted operating profit and Adjusted earnings per share) to report the results on the basis that all forward contracts are accounted for as effective hedges. These measures are the basis by which the Board evaluates the Group's performance as they better represent the underlying trading of the Group. The table below shows the details of the adjustments between adjusted profit before tax and statutory profit before tax.

	2019 £m	2018 £m
Adjusted profit before tax	103.9	145.1
Fair value gains and losses on financial instruments not eligible for hedge accounting:		
- reported in revenue	5.0	5.3
- reported in gains from the fair value of financial instruments	1.0	4.8
Statutory profit before tax	109.9	155.2

See note 25 for further details on this and Revenue at constant exchange rates.

Earnings per share and dividend

Adjusted earnings per share from continuing operations is 119.9p, compared with 170.5p last year. Statutory earnings per share from continuing operations is 126.7p, compared with 181.8p last year.

A final dividend of 46.0p net per share (2018: 46.0p) results in a total dividend for the year of 60.0p (2018: 60.0p). Dividend cover is 2.0 times (2018: 2.8 times) on an adjusted basis.

Research and development

Gross expenditure on engineering costs, including R&D on new products, was £97.9m (2018: £83.6m). The gross charge amounts to 17% of Group revenue (2018: 14%).

The capitalisation of development costs (net of amortisation charges) amounted to £2.9m (2018: £2.1m). The R&D tax credit in 2019 amounted to £5.1m compared with £4.1m in 2018. The net charge in the Consolidated income statement amounted to £89.8m compared with £77.4m in 2018.

Between the business segments gross expenditure on engineering costs was £90.7m (2018: £77.1m) in the metrology segment and £7.2m (2018: £6.5m) in our healthcare segment.

New product R&D expenditure amounted to £67.0m, which compares with £59.1m spent last year. There have been a number of new product releases in both our metrology and healthcare business segments, and a number of new product introductions are anticipated during the 2020 financial year.

Group headcount

Group headcount has increased from 4,862 at 30 June 2018 to 5,041 at 30 June 2019, with the average for the year of 4,968, compared with 4,639 last year. The increase during the year of 179 comprised additional employees of 122 in the UK and 57 overseas. In the UK we took on 119 apprentices and graduates in the year, and are also funding the further education of 117 employees in engineering, software and commercial/professional disciplines.

Labour costs, the most significant cost for the Group, increased by 5% to £237.4m (2018: £226.8m) reflecting a pay increase in July 2018 and the incremental cost of the employees recruited in both 2018 and 2019, partially offset by a reduction in bonuses.

Business systems transformation

In recent years, we have made significant progress in enhancing and simplifying financial reporting processes and systems, to further improve the analysis of business performance. With a focus on increasing productivity and efficiency, further major system deployments are in progress for our HR, engineering change management and marketing activities. We have recently committed to a new ERP system to replace our global finance, sales & marketing and CRM systems. This will deliver many benefits to the business including enhanced customer support and inventory management and will provide the infrastructure to support our growing solution selling activities.

Consolidated balance sheet

The Group's shareholders' funds at the end of the year were £583.3m, compared with £548.6m at 30 June 2018. Reserves benefited from our trading results, with a retained profit after tax of £92.2m and were reduced by dividends paid of £43.7m.

Additions to property, plant and equipment and vehicles totalled £56.8m, of which £25.4m was spent on property and £31.4m on plant and machinery, IT equipment and infrastructure, and vehicles.

The main additions were:

- in the UK, a 94,000 sq ft extension to our Renishaw Innovation Centre due for completion in December 2019;
- in The Netherlands, the purchase of our existing facility;
- in Brazil, the purchase of land for the future development of a new distribution facility; and
- in Japan, the purchase of property in Nagoya to support the expansion of our distribution function, funded by local third-party borrowing.

Within working capital, inventories increased to £129.0m from £110.6m at the beginning of the year primarily reflecting the impact of Brexit contingency preparations and the reduced demand we experienced in the second half of the financial year. We continue to focus on inventory management while remaining committed to our policy of holding sufficient finished goods to ensure customer delivery performance, given our short order book.

Trade receivables decreased from £154.6m to £123.2m reflecting record revenue in the final quarter of 2018. Debtor days were 73 at the end of the year, compared with 69 at the end of last year.

Net cash balances at 30 June 2019 were £106.8m (2018: £103.8m).

Pensions

At the end of the year, the Group's defined benefit pension schemes, now closed for future accrual, showed a deficit of £51.9m, compared with a deficit of £67.4m at 30 June 2018. Defined benefit pension schemes' assets at 30 June 2019 increased to £181.6m from £172.8m at 30 June 2018, representing investment performance during the year net of £7.2m benefit payments including transfers. Pension fund liabilities decreased from £240.2m to £233.5m. Following further engagement with The Pensions Regulator, the Company and trustees have agreed the terms of a new deficit funding plan for the UK defined benefit pension scheme, based on the triennial valuation as at 30 September 2018. The Company has agreed to pay £8.7m per annum into the scheme for five years with effect from 1 October 2018. Under the terms of the previous agreement, the Company paid approximately £4.0m per year.

In line with the previous agreement, the new agreement will continue until 30 June 2031 and any outstanding deficit paid at that time. The agreement will end sooner if the actuarial deficit (calculated on a self-sufficiency basis) is eliminated in the meantime.

On 26 October 2018, the High Court reached a judgement in relation to Lloyds Banking Group's defined benefit pension schemes which concluded that the schemes should be amended to equalise pension benefits for men and women as regards guaranteed minimum pension benefits. The issues determined by the judgment arise in relation to most other defined benefit pension schemes and are relevant to the Company's UK defined benefit pension scheme. Following discussions between the Company, the trustees and their respective advisors, we have estimated incremental liabilities to be £0.8m, which have been recognised in the Consolidated Income Statement in Administrative expenses. The estimate has increased the scheme's liabilities by 0.4% and is based on the C2 method which has been approved by the courts and likely to be the most commonly used approach. The Company and Trustees along with their respective advisors continue to assess the most appropriate method to achieve the equalisation of benefits.

Treasury policies

The Group's treasury policies are designed to manage financial risks to the Group that arise from operating in a number of foreign currencies and to maximise interest income on cash deposits. As an international group, the main exposure is in respect of foreign currency risk on the trading transactions undertaken by Group companies and on the translation of the net assets of overseas subsidiaries.

Weekly Group-wide cash management reporting and forecasting is in place to facilitate management of this currency risk. The operations of Group Treasury, which is situated at head office, are governed by Board-approved policies.

All Sterling and foreign currency balances not immediately required for Group operations are placed on short-term deposit with leading international highly-rated financial institutions. See note 15 for an analysis of cash balances at the year end.

The Group uses forward exchange contracts to hedge a significant proportion of anticipated foreign currency cash inflows. There are forward contracts in place to hedge against the Group's Euro, US Dollar and Japanese Yen cash inflows. The Group does not speculate with derivative financial instruments. See note 20 for further details on financial instruments.

Capital allocation strategy

The Board regularly reviews the capital requirements of the Group, in order to maintain a strong financial position to protect the business and provide flexibility to fund future growth.

Our capital allocation approach has been consistently applied for many years. We are committed to investment in the R&D of new products, manufacturing processes and global support infrastructure in order to generate growth in future returns. This is evidenced in the year with capital investments and additional R&D spend cited previously. Actual and forecast returns, along with our strong financial position, then support our progressive dividend policy, which aims to increase the dividend per share, whilst maintaining a prudent level of dividend cover.

Allen Roberts

Group Finance Director

STATEMENT OF DIRECTORS' RESPONSIBILITIES

The Directors are responsible for preparing the Group and Company Financial statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare Group and Company Financial statements for each financial year. Under that law the Directors have prepared the Group Financial statements in accordance with International Financial Reporting Standards (IFRSs) as adopted by the European Union (EU) and have prepared the Company Financial statements in accordance with UK Accounting Standards, including FRS 101 'Reduced Disclosure Framework'.

Under company law the Directors must not approve the Financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the Company and of their profit or loss for that period.

In preparing each of the Group and Company Financial statements, the Directors are required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and accounting estimates that are reasonable and prudent;
- for the Group Financial statements, state whether they have been prepared in accordance with IFRSs as adopted by the EU, subject to any material departures disclosed and explained in the Financial statements;
- for the Company Financial statements, state whether applicable UK Accounting Standards, including FRS 101 'Reduced Disclosure Framework', have been followed, subject to any material departures disclosed and explained in the Company Financial statements; and
- prepare the Financial statements on the going concern basis unless it is inappropriate to presume that the Group and the Company will continue in business.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Company's transactions and disclose with reasonable accuracy at any time the financial position of the Group and the Company and enable them to ensure that the Financial statements comply with the Companies Act 2006.

They are also responsible for taking such steps as are reasonably open to them to safeguard the assets of the Group and the Company to prevent and detect fraud and other irregularities.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the Company's website. Legislation in the UK governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

We confirm that to the best of our knowledge the Financial statements, prepared in accordance with the applicable set of accounting standards, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group and of the Company and the undertakings included in the consolidation taken as a whole.

Allen Roberts

Group Finance Director

CONSOLIDATED INCOME STATEMENT
for the year ended 30 June 2019

	Notes	2019 £'000	2018 £'000
from continuing operations			
Revenue	2	573,959	611,507
Cost of sales		(289,832)	(284,889)
Gross profit		284,127	326,618
Distribution costs		(126,822)	(121,352)
Administrative expenses		(58,593)	(56,911)
Gains from the fair value of financial instruments	20	1,081	4,834
Operating profit		99,793	153,189
Financial income	4	7,238	653
Financial expenses	4	(902)	(1,587)
Share of profits of associates and joint ventures		3,815	2,970
Profit before tax	5	109,944	155,225
Income tax expense	8	(17,712)	(22,870)
Profit for the year from continuing operations		92,232	132,355
Profit for the year from discontinued operations	7	-	582
Profit for the year		92,232	132,937
Profit attributable to:			
Equity shareholders of the parent company		92,232	132,924
Non-controlling interest	21	-	13
Profit for the year		92,232	132,937
Dividend per share arising in respect of the year	21	pence 60.0	pence 60.0
Dividend per share paid in the year		60.0	53.5
Earnings per share from continuing operations (basic and diluted)	6	126.7	181.8
Earnings per share from discontinued operations (basic and diluted)	6	-	0.8
Earnings per share from continuing and discontinued operations (basic and diluted)		126.7	182.6

All discontinued operations relate to operations discontinued as at June 2017. See note 7 'Discontinued operations' for further details

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME AND EXPENSE
for the year ended 30 June 2019

	Notes	2019 £'000	2018 £'000
Profit for the year		92,232	132,937
Other items recognised directly in equity:			
Items that will not be reclassified to the Consolidated income statement:			
Remeasurement of defined benefit pension scheme liabilities	13	10,273	(3,813)
Deferred tax on remeasurement of defined benefit pension scheme liabilities		(1,534)	783
Total for items that will not be reclassified		8,739	(3,030)
Items that may be reclassified to the Consolidated income statement:			
Exchange differences in translation of overseas operations		2,045	2,107
Exchange differences in translation of overseas joint venture		72	48
Current tax on translation of net investments in foreign operations		(205)	-
Effective portion of changes in fair value of cash flow hedges, net of recycling	21	(27,573)	14,470
Deferred tax on effective portion of changes in fair value of cash flow hedges	21	4,561	(2,810)
Total for items that may be reclassified		(21,100)	13,815
Total other comprehensive income and expense, net of tax		(12,361)	10,785
Total comprehensive income and expense for the year		79,871	143,722
Attributable to:			
Equity shareholders of the parent company		79,871	143,709
Non-controlling interest	21	-	13
Total comprehensive income and expense for the year		79,871	143,722

CONSOLIDATED BALANCE SHEET
at 30 June 2019

	Notes	2019 £'000	2018 £'000
Assets			
Property, plant and equipment	10	263,477	232,557
Intangible assets	11	59,056	54,511
Investments in associates and joint ventures	12	13,095	9,822
Long-term loans to associates and joint ventures	24	750	4,207
Deferred tax assets	9	29,855	27,428
Derivatives	20	1,311	9,578
Total non-current assets		367,544	338,103
Current assets			
Inventories	16	129,026	110,563
Trade receivables	20	123,151	154,587
Contract assets		352	-
Short-term loans to associates and joint ventures	24	6,644	-
Current tax		4,553	730
Other receivables	20	24,461	21,988
Derivatives	20	2,778	1,368
Pension scheme cash escrow account	13	10,490	10,413
Cash and cash equivalents	15, 20	106,826	103,847
Total current assets		408,281	403,496
Current liabilities			
Trade payables	20	21,513	25,232
Contract liabilities		5,631	-
Current tax		4,538	9,256
Provisions	17	2,846	3,453
Derivatives	20	18,920	22,478
Borrowings	19	1,043	-
Other payables	18	41,065	47,979
Total current liabilities		95,556	108,398
Net current assets		312,725	295,098
Non-current liabilities			
Borrowings	19	9,356	-
Employee benefits	13	51,870	67,378
Deferred tax liabilities	9	539	188
Derivatives	20	35,227	17,041
Total non-current liabilities		96,992	84,607
Total assets less total liabilities		583,277	548,594
Equity			
Share capital	21	14,558	14,558
Share premium		42	42
Own shares held	21	(404)	-
Currency translation reserve	21	14,577	12,665
Cash flow hedging reserve	21	(42,401)	(19,389)
Retained earnings		597,784	541,755
Other reserve	21	(302)	(460)
Equity attributable to the shareholders of the parent company		583,854	549,171
Non-controlling interest	21	(577)	(577)
Total equity		583,277	548,594

These financial statements were approved by the Board of directors on 1 August 2019 and were signed on its behalf by:

Sir David McMurtry
Directors

Allen Roberts

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY
for the year ended 30 June 2019

Year ended 30 June 2018	Share capital £'000	Share premium £'000	Own Shares Held £'000	Currency translation reserve £'000	Cash flow hedging reserve £'000	Retained earnings £'000	Other reserve £'000	Non-controlling interest £'000	Total £'000
Balance at 1 July 2017	14,558	42	-	10,510	(31,049)	450,803	(460)	(590)	443,814
Profit for the year	-	-	-	-	-	132,924	-	13	132,937
Other comprehensive income and expense (net of tax)									
Remeasurement of defined benefit pension scheme liabilities	-	-	-	-	-	(3,030)	-	-	(3,030)
Foreign exchange translation differences	-	-	-	2,107	-	-	-	-	2,107
Relating to associates and joint ventures	-	-	-	48	-	-	-	-	48
Changes in fair value of cash flow hedges	-	-	-	-	11,660	-	-	-	11,660
Total other comprehensive income and expense	-	-	-	2,155	11,660	(3,030)	-	-	10,785
Total comprehensive income and expense	-	-	-	2,155	11,660	129,894	-	13	143,722
Dividends paid	-	-	-	-	-	(38,942)	-	-	(38,942)
Balance at 30 June 2018	14,558	42	-	12,665	(19,389)	541,755	(460)	(577)	548,594
Adjustment for IFRS 15	-	-	-	-	-	(1,270)	-	-	(1,270)
Balance at 1 July 2018 restated	14,558	42	-	12,665	(19,389)	540,485	(460)	(577)	547,324
Year ended 30 June 2019									
Profit for the year	-	-	-	-	-	92,232	-	-	92,232
Other comprehensive income and expense (net of tax)									
Remeasurement of defined benefit pension scheme liabilities	-	-	-	-	-	8,739	-	-	8,739
Foreign exchange translation differences	-	-	-	1,840	-	-	-	-	1,840
Relating to associates and joint ventures	-	-	-	72	-	-	-	-	72
Changes in fair value of cash flow hedges	-	-	-	-	(23,012)	-	-	-	(23,012)
Total other comprehensive income and expenses	-	-	-	1,912	(23,012)	8,739	-	-	(12,361)
Total comprehensive income and expenses	-	-	-	1,912	(23,012)	100,971	-	-	79,871
Share-based payments charge	-	-	-	-	-	-	158	-	158
Purchase of own shares	-	-	(404)	-	-	-	-	-	(404)
Dividends paid	-	-	-	-	-	(43,672)	-	-	(43,672)
Balance at 30 June 2019	14,558	42	(404)	14,577	(42,401)	597,784	(302)	(577)	583,277

More details of share capital and reserves are given in note 21.

CONSOLIDATED STATEMENT OF CASH FLOW
for the year ended 30 June 2019

	Notes	2019 £'000	2018 £'000
Cash flows from operating activities			
Profit for the year		92,232	132,937
Adjustments for:			
Amortisation of development costs	11	15,144	12,483
Amortisation of other intangibles	11	1,518	2,142
Impairment of goodwill		-	1,559
Impairment of property, plant and equipment	10	1,155	-
Depreciation	10	22,597	26,140
Loss on sale of property, plant and equipment		148	37
Profit on sale of other intangibles		(455)	-
Remeasurement of defined benefit pension scheme liabilities from GMP equalisation	13	751	-
Gains from the fair value of financial instruments	25	(6,081)	(10,143)
Share of profits from associates and joint ventures	12	(3,815)	(2,970)
Financial income	4	(7,238)	(653)
Financial expenses	4	902	1,587
Share-based payment expense	14	158	-
Tax expense	8	17,712	22,870
		42,496	53,052
Increase in inventories		(18,463)	(22,866)
Decrease/(increase) in trade and other receivables		30,028	(25,921)
Increase/(decrease) in trade and other payables		(7,183)	17,770
Increase/(decrease) in provisions	17	(607)	493
		3,775	(30,524)
Defined benefit pension contributions	13	(6,831)	(4,471)
Income taxes paid		(25,183)	(18,882)
Cash flows from operating activities		106,489	132,112
Investing activities			
Purchase of property, plant and equipment	10	(56,792)	(34,852)
Development costs capitalised	11	(18,091)	(14,602)
Purchase of other intangibles		(4,161)	(1,700)
Sale of other intangibles		2,000	-
Sale of property, plant and equipment		4,713	2,889
Interest received	4	1,222	653
Dividend received from associates and joint ventures	12	614	507
Payments (to)/from pension scheme escrow account		(77)	2,437
Cash flows from investing activities		(70,572)	(44,668)
Financing activities			
Interest paid	4	(57)	(338)
Increase in borrowings	19	10,486	-
Repayment of borrowings	19	(87)	-
Dividends paid	21	(43,672)	(38,942)
Purchase of own shares	21	(404)	-
Cash flows from financing activities		(33,734)	(39,280)
Net increase in cash and cash equivalents		2,183	48,164
Cash and cash equivalents at beginning of the year		103,847	51,942
Effect of exchange rate fluctuations on cash held		796	3,741
Cash and cash equivalents at end of the year	15	106,826	103,847

NOTES (FORMING PART OF THE FINANCIAL STATEMENTS)

1. Accounting policies

Basis of preparation

Renishaw plc (the Company) is a company incorporated in England and Wales. The Group financial statements consolidate those of the Company and its subsidiaries (together referred to as the Group) and equity account the Group's interest in associates and joint ventures.

The Group financial statements have been prepared and approved by the directors in accordance with International Financial Reporting Standards as adopted by the EU (adopted IFRS). The consolidated financial statements are presented in Sterling, which is the Company's functional currency and the Group's presentational currency, and all values are rounded to the nearest thousand (£'000). These do not represent the company's statutory accounts, which have not yet been delivered to the registrar for 2019. An unqualified auditor's report was signed on 1 August 2019.

The accounting policies set out below have, unless otherwise stated, been applied consistently to all periods presented in these Group financial statements. Judgements made by the directors, in the application of these accounting policies, that have a significant effect on the financial statements and estimates with a significant risk of material adjustment in the next year are noted below.

Renishaw GmbH, Pliezhausen, Germany has chosen to exercise the right under section 264 – sub-section 3 of the German Commercial Code (HGB) on exemption and preparation. The consolidated financial statements of the Group include the financial statements of Renishaw GmbH, Pliezhausen, Germany.

Critical accounting judgements and estimation uncertainties

The preparation of financial statements in conformity with adopted IFRS requires management to make judgements, estimates and assumptions that affect the application of policies and reported amounts of assets and liabilities, income and expenses. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis of making the judgements about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates. The estimates and underlying assumptions are reviewed on an ongoing basis.

The areas of key estimation uncertainty and critical accounting judgement that have a significant risk of causing a material adjustment to the carrying amount of assets and liabilities in the next financial year are summarised below, with further details included within accounting policies as indicated.

Item	Key judgements (J) and estimates (E)
Revenue recognition	J – Timing of satisfaction of performance obligations
Intangibles	E – Estimates of useful life of intangible assets
Research and development costs	J – Whether a project meets appropriate criteria for capitalisation
Goodwill and capitalised development costs	E – Estimates of future cash flows for impairment testing
Inventory	E – Determination of net realisable inventory value
Defined benefit pension schemes	E – Valuation of defined benefit pension schemes' liabilities
Taxation	E – Estimates of future profits to utilise deferred tax assets

New, revised or changes to existing accounting standards

The following accounting standards have been applied for the first time, with effect from 1 July 2018, and have been adopted in the preparation of these financial statements.

IFRS 15 'Revenue from Contracts with Customers'

The Group adopted IFRS 15 on 1 July 2018 using the modified retrospective transition approach, taking advantage of the practical expedient in IFRS 15 C7 to apply the standard retrospectively only to contracts that are not completed as at 1 July 2018.

IFRS 15 provides a single, principles-based five-step model to be applied to all sales contracts with customers, against which the Group has reviewed the following:

- individually-significant contracts by value;
- customers with cumulatively-significant contracts;
- variable consideration arrangements;
- warranty arrangements, analysing such arrangements between assurance-type warranties already accounted for under IAS 37 and 'service-type' warranties as defined by IFRS 15, to which revenue should be attributed to and deferred over the service period; and

– sale of software licences and maintenance.

The impact on the Group's results and net assets is not material, with a cumulative catch-up adjustment of £1,270,000 made to equity at 1 July 2018. This primarily relates to the impact of more revenue being allocated to extended warranties under IFRS 15 than under IAS 18. See note 26 for a comparison between IFRS 15 and IAS 18 on the 2019 financial statements.

Consolidated balance sheet extract	Balances as at 30 June 2018 £'000	IFRS 15 Adjustment £'000	Balances as at 1 July 2018 £'000
Non-current assets			
Deferred tax assets	27,428	372	27,800
Current liabilities			
Contract liabilities	-	1,642	1,642
Equity			
Retained earnings	541,755	(1,270)	540,485
- related to Revenue	-	(1,642)	-
- related to Income tax expense	-	372	-

IFRS 9 'Financial Instruments'

The Group adopted IFRS 9 on 1 July 2018. The Standard introduced new requirements for the classification and measurement of financial assets, impairment of financial assets and hedge accounting.

For the classification and measurement requirements, no changes have arisen from IFRS 9, while for the new impairment requirements, the Group recognises an 'expected credit loss' (ECL) for trade receivables under the Standard's 'simplified approach'. IFRS 9 does not impact hedge accounting in the Group's financial statements because all hedging relationships that were eligible under IAS 39 remain eligible under IFRS 9 and the change in fair value of foreign currency contracts continues to hedge movements in the forward currency rate. No adjustments have been made in respect of IFRS 9 to the Group's opening reserves at 1 July 2018 as the impairment adjustment calculated from a simple ECL model which considered historic credit loss rates was not material to the Group.

In addition to IFRS 15 and IFRS 9, the Group has adopted the following IFRS amendments, which have not had a material impact on amounts reported or disclosures in these financial statements:

- IFRS 2 (amendments) - Classification and Measurement of Share-based Payment Transactions;
- IAS 40 (amendments) - Transfers of Investment Property;
- IAS 28 (amendments) - Investments in Associates and Joint Ventures; and
- IFRIC 22 'Foreign Currency Transactions and Advance Consideration'.

The following accounting standards and interpretations have been issued but are not yet effective for the Group and have not been applied in these financial statements:

- IFRS 16 'Leases';
- IFRS 17 'Insurance Contracts';
- IFRS 9 (amendments) - Prepayment Features with Negative Compensation;
- IAS 28 (amendments) - Long-term Interests in Associates and Joint Ventures;
- IAS 19 (amendments) - Plan Amendment, Curtailment or Settlement;
- IFRS 10 and IAS 28 (amendments) - Sale or Contribution of Assets between an Investor and its Associate or Joint Venture;
- Annual Improvements - Amendments to IFRS 3 Business Combinations, IFRS 11 Joint Arrangements, IAS 12 Income Taxes and IAS 23 Borrowing Costs; and
- IFRIC 23 'Uncertainty over Income Tax Treatments'.

These are not expected to have a material impact on the financial statements of the Group, except in relation to IFRS 16.

IFRS 16 is effective for accounting periods beginning on or after 1 January 2019 and will be adopted by the Group for the financial year commencing 1 July 2019. Where the Group acts as a lessor, the accounting treatment is substantially unchanged. Where the Group acts as a lessee, the new standard will eliminate the classification of leases as either operating or finance leases and instead the Group will recognise a right of use

asset and a lease liability for all leases (except for low-value assets and leases less than 12 months), similar to the accounting for finance leases under IAS 17.

At 1 July 2019 right-of-use assets and lease liabilities of £13,079,000 are expected to be recognised by the Group under the new standard, of which £11,088,000 relates to property and £1,880,000 relates to vehicles.

Depreciation on the right-of-use assets will then be charged to the Consolidated income statement on a straight line basis over the lower of the asset's useful life or the life of the lease contract, while interest will be accreted to the lease liability across the same period. The aggregate of depreciation and interest expense will generally result in higher expenses in the earlier periods of a lease, however this is not expected to be material for the Group. No transition adjustment will be required to opening reserves in 2020.

Going concern

The Group's business activities, together with the factors likely to affect its future development, performance and position, are set out in the Strategic report, where details of the financial and liquidity positions are also given. In addition, note 20 in the financial statements includes the Group's objectives and policies for managing its capital, details of its financial instruments and hedging activities and its exposures to credit risk and liquidity risk. The Group has considerable financial resources at its disposal and the directors have considered the current financial projections. As a consequence, the directors consider that the Group is well placed to manage its business risks successfully.

After making enquiries, the directors have a reasonable expectation that the Company and the Group have adequate resources to continue in operational existence for a period of at least 12 months from the date of approval of the financial statements. Accordingly, they continue to adopt the going concern basis in preparing the Annual Report.

Basis of consolidation

Subsidiaries – Subsidiaries are entities controlled by the Group. The Group controls an entity when it is exposed to or has rights to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. In assessing control, the Group takes into consideration potential voting rights that are exercisable. The acquisition date is the date on which control is transferred to the acquirer. The financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases. Losses applicable to the noncontrolling interests in a subsidiary are allocated to the non-controlling interests even if doing so causes the non-controlling interests to have a deficit balance.

Application of the equity method to associates and joint ventures – Associates and joint ventures are accounted for using the equity method (equity accounted investees) and are initially recognised at cost. The Group's investment includes goodwill identified on acquisition, net of any accumulated impairment losses. The consolidated financial statements include the Group's share of the total comprehensive income and equity movements of equity accounted investees, from the date that significant influence commences until the date that significant influence ceases. When the Group's share of losses exceeds its interest in an equity accounted investee, the Group's carrying amount is reduced to nil and recognition of further losses is discontinued except to the extent that the Group has incurred legal obligations or made payments on behalf of an investee.

Transactions eliminated on consolidation – Intragroup balances and transactions, and any unrealised income and expenses arising from intragroup transactions, are eliminated. Unrealised gains arising from transactions with equity accounted investees are eliminated against the investment to the extent of the Group's interest in the investee. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment.

Alternative performance measures

The financial statements are prepared in accordance with adopted IFRS and applied in accordance with the provisions of the Companies Act 2006. In measuring our performance, the financial measures that we use include those which have been derived from our reported results in order to eliminate factors which distort year-on-year comparisons.

These are considered non-GAAP financial measures. We believe this information, along with comparable GAAP measurements, is useful to stakeholders in providing a basis for measuring our operational performance. The Board uses these financial measures, along with the most directly comparable GAAP financial measures, in evaluating our performance (see note 25).

Revenue

The Group generates revenue from the sale of metrology and healthcare goods, capital equipment and services. These can be sold both on their own and together as bundled packages.

a) Sale of goods, capital equipment and services

The Group's contracts with customers consist both of contracts with one performance obligation and contracts with multiple performance obligations.

For contracts with one performance obligation, revenue is measured at the transaction price, which is typically the contract value except for customers entitled to volume rebates, and recognised at the point in time when control of the product transfers to the customer. This point in time is typically when the products are made available for collection by the customer, collected by the shipping agent, or delivered to the customer, depending upon the shipping terms applied to the specific contract.

Contracts with multiple performance obligations typically exist where, in addition to supplying product, we also supply services such as user training, servicing and maintenance, and installation services. Where the installation service is simple, does not include a significant integration service and could be performed by another party then the installation is accounted for as a separate performance obligation. Where the contracts include multiple performance obligations, the transaction price is allocated to each performance obligation based on the relative stand-alone selling prices, the assessment of which is documented in the Key judgement below. The revenue allocated to each performance obligation is then recognised when, or as, that performance obligation is satisfied. For installation, this is typically at the point in time in which installation is complete. For training, this is typically the point in time at which training is delivered. For servicing and maintenance, the revenue is recognised evenly over the course of the servicing agreement except for ad-hoc servicing and maintenance which is recognised at the point in time in which the work is undertaken.

b) Sale of software

The Group provides software licences and software maintenance to customers, sold both on their own and together as a bundled package with associated products. Where the software licence and/or maintenance is provided as part of a bundled package then the transaction price is allocated on the same basis as described in a) above.

The Group's software licences provide a right of use, and therefore revenue from software licences is recognised at the point in time in which the licence is supplied to the customer. Revenue from software maintenance is recognised evenly over the term of the maintenance agreement.

c) Programming contracts

Programming is typically a distinct performance obligation and revenue for this work is recognised at a point in time, being when the completed program is supplied to the customer.

d) Extended warranties

The Group provides standard warranties to customers that address potential latent defects that existed at point of sale and as required by law ('assurance-type' warranties). In some contracts, the Group also provides warranties that extend beyond the standard warranty period and may be sold to the customer ('service-type' warranties).

Assurance-type warranties continue to be accounted for by the Group under IAS 37 'Provisions, Contingent Liabilities and Contingent Assets'. Service-type warranties are accounted for as separate performance obligations and therefore a portion of the transaction price is allocated to this element, and then recognised evenly over the period in which the service is provided.

e) Contract fulfilment costs

Contract fulfilment costs are recognised as an asset when they directly relate to a contract, will be used to fulfil one or more performance obligations in a contract in the future, and are expected to be recoverable. Contract fulfilment costs for the Group therefore typically relate to contracts in which programming is a distinct performance obligation and the associated labour costs have been incurred but the program has not yet been provided to the customer. Such assets are amortised to the income statement when the corresponding performance obligation is fulfilled.

f) Contract balances

Contract assets represent the Group's right to consideration in exchange for goods and services that have been transferred to a customer, and mainly includes accrued revenue in respect of goods and services provided to a customer but not yet fully billed. Contract assets are distinct from receivables, which represent the Group's right to consideration that is unconditional.

Contract liabilities represent the Group's obligation to transfer goods or services to a customer for which the Group has either received consideration or consideration is due from the customer.

g) Disaggregation of revenue

The Group disaggregates revenue from contracts with customers between:

- goods, capital equipment and installation, and aftermarket services;
- reporting segment; and

- geographical location.

Management believe these categories best depict how the nature, amount, timing and uncertainty of the Group's revenue is affected by economic factors.

Key judgement - Timing of satisfaction of performance obligations

The majority of the Group's revenue is recognised at a point in time, and to determine that point an assessment is made as to when the customer obtains control of promised products or services. This assessment is made primarily by reference to the shipping terms applied to the specific contract for products that do not require customer acceptance.

Where the contract requires customer acceptance, management assess whether the Group can objectively determine that the criterion of the testing can be successfully met at the point of transferring the equipment to the customer. Where this can be objectively determined, customer acceptance testing is considered a formality and does not delay the recognition of revenue. Where this cannot be objectively determined control of the product is not deemed to have transferred to the customer and therefore the portion of the transaction price that relates to this performance obligation is not recognised until the acceptance criteria are met.

For revenue recognised over time, such as servicing contracts, the Group recognises the revenue on a basis that depicts the Group's performance in transferring control of the goods or services to the customer, having assessed the nature of the promised goods or service. The Group applies the relevant output or input method consistently to similar performance obligations in other contracts.

The point at which control of performance obligations is transferred to customers under IFRS 15 is the same as under IAS 18 for the majority of our contracts with customers.

Foreign currencies

Consolidation – Overseas subsidiaries' results are translated into Sterling at weighted average exchange rates for the year, which is effected by translating each overseas subsidiary's monthly results at exchange rates applicable to each of the respective months. Assets and liabilities denominated in foreign currencies at the balance sheet date are translated into Sterling at the foreign exchange rates ruling at that date. Differences on exchange resulting from the translation of overseas assets and liabilities are recognised in Other comprehensive income and accumulated in equity.

Transactions and balances – Monetary assets and liabilities denominated in foreign currencies are reported at the rates prevailing at the time, with any gain or loss arising from subsequent exchange rate movements being included as an exchange gain or loss in the Consolidated income statement. Foreign currency differences arising from transactions are recognised in the Consolidated income statement.

Financial instruments and fair value measurements

The Group measures financial instruments such as forward exchange contracts at fair value at each balance sheet date in accordance with IFRS 9. Fair value, as defined by IFRS 13, is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Note 20, Financial instruments, provides detail on the IFRS 13 fair value hierarchy.

Trade and other current receivables are initially recognised at fair value and are subsequently held at amortised cost less any provision for bad and doubtful debts and expected credit losses according to IFRS 9. Long-term loans to associates and joint ventures are initially recognised at fair value and are subsequently held at amortised cost. Trade and other current payables are initially recognised at fair value and are subsequently held at amortised cost.

Foreign currency derivative cash flow hedges

Foreign currency derivatives are used to manage risks arising from changes in foreign currency rates relating to overseas sales and foreign currency denominated assets and liabilities. The Group does not enter into derivatives for speculative purposes. Foreign currency derivatives are stated at their fair value, being the estimated amount that the Group would pay or receive to terminate them at the balance sheet date, based on prevailing foreign currency rates.

Changes in the fair value of foreign currency derivatives which are designated and effective as hedges of future cash flows are recognised in Other comprehensive income and in the Currency hedging reserve, and subsequently transferred to the carrying amount of the hedged item or the Consolidated income statement. Realised gains or losses on cash flow hedges are therefore recognised in the Consolidated income statement within revenue in the same period as the hedged item.

Hedge accounting is discontinued when the hedging instrument expires or no longer qualifies for hedge accounting. At that time, any cumulative gain or loss on the hedging instrument previously recognised in equity is retained in equity until the hedged transaction occurs. If the hedged transaction is no longer expected to occur, the net cumulative gain or loss recognised in equity is then transferred to the Consolidated income statement.

Changes in fair value of foreign currency derivatives, which are ineffective or do not meet the criteria for hedge accounting in IFRS 9 'Financial instruments', are recognised in the Consolidated income statement within Gains/losses from the fair value of financial instruments.

In addition to derivatives held for cash flow hedging purposes, the Group uses short-term derivatives not designated as hedging instruments to offset gains and losses from exchange rate movements on foreign currency denominated assets and liabilities. Gains and losses from currency movements on underlying assets and liabilities, realised gains and losses on these derivatives and fair value gains and losses on outstanding derivatives of this nature are all recognised in Financial income in the Consolidated income statement. See note 20 for further detail on financial instruments.

Cash and cash equivalents

Cash and cash equivalents comprise cash balances and short-term (with an original maturity of less than 12 months) deposits. Bank overdrafts that are repayable on demand form part of cash and cash equivalents for the purpose of the Consolidated statement of cash flow.

Pension scheme cash escrow account

The Company holds a pension scheme escrow account as part of the security given for the UK defined benefit pension scheme. This account is shown within current assets in the Consolidated balance sheet as it may be used to settle pension scheme liabilities immediately upon enforcement of the charge over the account.

Goodwill and other intangible assets

Costs related to the acquisition, other than those associated with the issue of debt or equity securities, are expensed as incurred. Deferred consideration relating to acquisitions is subject to discounting to the date of acquisition and subsequently unwound to the date of the final payment. Goodwill arising on acquisition represents the difference between the cost of the acquisition and the fair value of the net identifiable assets acquired, net of deferred tax. Identifiable intangibles are those which can be sold separately or which arise from legal rights regardless of whether those rights are separable.

Business combinations are accounted for using the acquisition method as at the acquisition date, which is the date on which control is transferred to the Group.

Goodwill is stated at cost less any accumulated impairment losses. It is not amortised but is tested annually for impairment or earlier if there are any indications of impairment. The annual impairment review involves comparing the carrying amount to the estimated recoverable amount and recognising an impairment loss if the recoverable amount is lower. Impairment losses are recognised through the Consolidated income statement.

Intangible assets such as customer lists, patents, trade marks, know-how and intellectual property that are acquired by the Group are stated at cost less amortisation and impairment losses. Amortisation is charged to the Consolidated income statement on a straight-line basis over the estimated useful lives of the intangible assets. The estimated useful lives of the intangible assets included in the Consolidated balance sheet reflect the benefit derived by the Group and vary from five to ten years.

Key estimate – Estimates of useful life of intangible assets

The periods of amortisation of intangible assets require judgements to be made on the estimated useful lives of the intangible assets to determine an appropriate rate of amortisation. Future assessments of impairment may lead to the writing off of certain amounts of intangible assets and the consequent charge in the Consolidated income statement for the accelerated amortisation. Capitalised development costs are written off over five years, the period over which demand forecasts can be reasonably predicted.

Intangible assets – research and development costs

Expenditure on research activities is recognised in the Consolidated income statement as an expense as incurred. Expenditure on development activities is capitalised if the product or process is technically and commercially feasible and the Group intends and has the technical ability and sufficient resources to complete development, future economic benefits are probable and the Group can measure reliably the expenditure attributable to the intangible asset during its development.

Development activities involve a plan or design for the production of new or substantially improved products or processes. The expenditure capitalised includes the cost of materials, direct labour and an appropriate proportion of overheads. Other development expenditure is recognised in the Consolidated income statement as an expense as incurred.

Capitalised development expenditure is amortised over five years and is stated at cost less accumulated amortisation and less accumulated impairment losses. Capitalised development expenditure is removed from the balance sheet ten years after being fully amortised.

Key judgement – Whether a project meets appropriate criteria for capitalisation

Product development costs are capitalised once a project has reached a certain stage of development and these costs are subsequently amortised over a five-year period. Judgements are required to assess whether the new product development has reached the appropriate point for capitalisation of costs to begin. Should a product be subsequently obsoleted, the accumulated capitalised development costs would need to be immediately written off in the Consolidated income statement.

Intangible assets – software licences

Intangible assets, comprising software licences that are acquired by the Group, are stated at cost less accumulated amortisation and impairment losses. Amortisation is charged on a straight-line basis over the estimated useful life of the assets. The useful life of each of these assets is assessed on an individual basis and they range from 2 to 10 years.

Impairment of non-current assets

All non-current assets are tested for impairment whenever there is an indication that their carrying value may be impaired. An impairment loss is recognised in the Consolidated income statement to the extent that an asset's carrying value exceeds its recoverable amount, which represents the higher of the asset's net realisable value and its value in use. An asset's value in use represents the present value of the future cash flows expected to be derived from the asset or from the cash-generating unit to which it relates. The present value is calculated using a discount rate that reflects the current market assessment of the time value of money and the risks specific to the asset concerned.

Goodwill and capitalised development costs are subject to an annual impairment test.

Key estimate – Estimates of future cash flows used for impairment testing

Determining whether goodwill is impaired requires an estimation of the value in use of cash-generating units (CGUs) to which goodwill has been allocated. The value in use calculation involves an estimation of the future cash flows of CGUs and also the selection of appropriate discount rates, which involves judgement, to calculate present values (see note 11). Similarly, determining whether capitalised development costs are impaired requires an estimation of their value in use which involves significant judgement.

Property, plant and equipment

Freehold land is not depreciated. Other assets are stated at cost less accumulated depreciation. Depreciation is provided to write off the cost of assets less their estimated residual value on a straight-line basis over their estimated useful economic lives as follows:

Freehold buildings 50 years, Plant and equipment 3 to 25 years, Vehicles 3 to 4 years.

Inventory and work in progress

Inventory and work in progress is valued at the lower of actual cost on a first-in, first-out (FIFO) basis and net realisable value. In respect of work in progress and finished goods, cost includes all production overheads and the attributable proportion of indirect overhead expenses that are required to bring inventories to their present location and condition. Overheads are absorbed into inventories on the basis of normal capacity or on actual hours if higher.

Key estimate – Determination of net realisable inventory value

Determining the net realisable value of inventory requires judgement, especially in respect of provisioning for slow moving and potentially obsolete inventory. Management consider historic and future forecast sales patterns of individual stock items when calculating inventory provisions. For most inventory lines, provisions are based on the excess levels held compared to a maximum three year outlook. Where strategic purchases of critical components have been made, an outlook beyond three years is considered where appropriate. The sensitivities around estimates vary significantly from product to product.

Warranty provisions

The Group provides a warranty from the date of purchase, except for those products that are installed by the Group where the warranty starts from the date of completion of the installation. This is typically for a 12-month

period, although up to three years is given for a small number of products. A warranty provision is included in the Group financial statements, which is calculated on the basis of historical returns and internal quality reports.

Employee benefits

The Group operates contributory pension schemes, largely for UK, Ireland and USA employees, which were of the defined benefit type up to 5 April 2007, 31 December 2007 and 30 June 2012 respectively, at which time they ceased any future accrual for existing members and were closed to new members.

The schemes are administered by trustees who are independent of the Group finances. Investment assets of the defined benefit schemes are measured at fair value using the bid price of the unitised investments, quoted by the investment manager, at the reporting date. Pension scheme liabilities are measured using a projected unit method and discounted at the current rate of return on a high-quality corporate bond of equivalent term and currency to the liability. Remeasurements arising from defined benefit schemes comprise actuarial gains and losses, the return on scheme assets (excluding interest) and the effect of the asset ceiling (if any, excluding interest). The Company recognises them immediately in Other comprehensive income and all other expenses related to defined benefit schemes are included in the Consolidated income statement.

The pension schemes' surpluses, to the extent that they are considered recoverable, or deficits are recognised in full and presented on the face of the Consolidated balance sheet under employee benefits. Where a guarantee is in place in relation to a pension scheme deficit, liabilities are reported in accordance with IFRIC 14 'The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction'. To the extent that contributions payable will not be available as a refund after they are paid into the plan, a liability is recognised at the point the obligation arises, which is the point at which the minimum funding guarantee is agreed. Overseas-based employees are covered by state, defined benefit and private pension schemes in their countries of residence. Actuarial valuations of overseas pension schemes were not obtained, apart from Ireland and USA, because of the limited number of members. For defined contribution schemes, the amount charged to the Consolidated income statement represents the contributions payable to the schemes in respect of the accounting period.

Accruals are made for holiday pay, based on a calculation of the number of days holiday earned during the year, but not yet taken and also for the annual performance bonus, if applicable.

Key estimate – Valuation of defined benefit pension schemes' liabilities

Determining the value of the future defined benefit obligation requires judgement in respect of the assumptions used to calculate liabilities and their present values. These include future mortality, discount rate and inflation. Management makes these judgements in consultation with independent actuaries. Details of the estimates and judgements in respect of the current year are given in note 13. Based on a review of the terms of the UK scheme trust deed, management has concluded that there are no likely circumstances which would result in the Company having an unconditional right to a refund in the event of a fund surplus.

Share-based payments

The Group provides share-based payment arrangements to certain employees in accordance with the Renishaw plc deferred annual equity incentive plan (the Plan). The share awards are subject only to continuing service of the employee and are equity settled. The fair value of the awards at the date of grant, which is estimated to be equal to the market value, is charged to the Consolidated income statement on a straight-line basis over a three year vesting period, with appropriate adjustments made to reflect expected or actual forfeitures. The corresponding credit is to Other reserve. The Renishaw Employee Benefit Trust (EBT) is responsible for purchasing shares on the open market on behalf of the Company to satisfy the Plan awards. Own shares held are recognised as an element in equity until they are transferred at the end of the vesting period, and such shares are excluded from earnings per share calculations.

Government grants

Government grants, comprising R&D tax credits, are recognised in the Consolidated income statement as a deduction against expenditure. Where grants are received in advance of the related expenses, they are initially recognised in the balance sheet and released to match the related expenditure.

Taxation

Tax on the profit for the year comprises current and deferred tax. Tax is recognised in the Consolidated income statement except to the extent that it relates to items recognised directly in Other comprehensive income, in which case it is recognised in the Consolidated statement of comprehensive income and expense. Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the balance sheet date, and any adjustment to tax payable in previous years.

Deferred tax is provided on temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. The following temporary differences are not provided for: the initial recognition of goodwill; the initial recognition of assets or liabilities that affect neither accounting nor taxable profit other than in a business combination; and differences relating to investments in subsidiaries, to the extent that they will probably not reverse in the foreseeable future. The amount of deferred tax provided is based on the expected manner of realisation or settlement of the carrying amount of assets and liabilities, using tax rates enacted or substantively enacted at the balance sheet date.

Key estimate – Estimates of future profits to support the recognition of deferred tax assets

Deferred tax assets are recognised to the extent it is probable that future taxable profits will be available, against which the deductible temporary differences can be utilised, based on management's assumptions relating to the amounts and timing of future taxable profits.

Estimates of future profitability on an entity basis are required to ascertain whether it is probable that sufficient taxable profits will arise to support the recognition of deferred tax assets relating to the corresponding entity.

Discontinued activities

Where a line of the Group's business is treated as a discontinued operation, the financial statements are re-presented and restated where required as if operations discontinued during the current year had been discontinued from the start of the comparative year. Discontinued operations are excluded from the results of continuing operations and are presented as a single amount as a profit or loss after tax from discontinued operations in the Consolidated income statement.

2. SEGMENTAL ANALYSIS

The Group manages its business in two segments, comprising metrology and healthcare products. The results of these are regularly reviewed by the Board to allocate resources to segments and to assess their performance. Within the operating segment of metrology, there are multiple product offerings with similar economic characteristics, and where the nature of the products and production processes and their customer bases are similar.

Year ended 30 June 2019	Metrology £'000	Healthcare £'000	Total £'000
Revenue	532,940	41,019	573,959
Depreciation and amortisation	37,714	2,700	40,414
Operating profit before gains from fair value of financial instruments	95,345	3,367	98,712
Share of profits from associates and joint ventures	3,815	-	3,815
Net financial gain	-	-	6,336
Gains from the fair value of financial instruments	-	-	1,081
Profit before tax	-	-	109,944
Year ended 30 June 2018	Metrology £'000	Healthcare £'000	Total £'000
Revenue	575,839	35,668	611,507
Depreciation and amortisation	38,690	2,075	40,765
Operating profit before gains from fair value of financial instruments	147,841	514	148,355
Share of profits from associates and joint ventures	2,970	-	2,970
Net financial expense	-	-	(934)
Gains from the fair value of financial instruments	-	-	4,834
Profit before tax	-	-	155,225

There is no allocation of assets and liabilities to operating segments. Depreciation is included within certain other overhead expenditure which is allocated to segments on the basis of the level of activity.

The following table shows the disaggregation of group revenue by category:

	2019 £'000	2018 £'000
Goods, capital equipment and installation	519,782	564,664
Aftermarket services	54,177	46,843
Total Group revenue	573,959	611,507

Aftermarket services include repairs, maintenance and servicing, programming, training, extended warranties, and software licences and maintenance.

The analysis of revenue by geographical market was:

	2019 £'000	2018 £'000
APAC	240,115	289,177
EMEA	167,211	165,126
Americas	132,589	126,638
UK	34,044	30,566
Total Group revenue	573,959	611,507

Revenue in the previous table has been allocated to regions based on the geographical location of the customer. Countries with individually material revenue figures in the context of the Group were:

	2019 £'000	2018 £'000
USA	113,235	108,118
China	111,002	150,183
Japan	63,650	60,855
Germany	60,916	64,394

There was no revenue from transactions with a single external customer which amounted to more than 10% of the Group's total revenue

The following table shows the analysis of non-current assets, excluding deferred tax and derivatives, by geographical region:

	2019 £'000	2018 £'000
UK	196,214	183,874
Overseas	140,164	117,223
Total non-current assets	336,378	301,097

No overseas country had non-current assets amounting to 10% or more of the Group's total non-current assets.

3. PERSONNEL EXPENSES

The aggregate payroll costs for the year were:

	2019 £'000	2018 £'000
Wages and salaries	193,035	183,873
Compulsory social security contributions	21,485	21,809
Contributions to defined contribution pension schemes	22,701	21,127
Share-based payment charge	158	-
Total payroll costs	237,379	226,809

The average number of persons employed by the Group during the year was:

	2019 Number	2018 Number
UK	3,126	2,934
Overseas	1,842	1,705
Average number of employees	4,968	4,639

Key management personnel have been assessed to be the Executive Directors of the Company. The total remuneration of the Directors was:

	2019 £'000	2018 £'000
Short-term employee benefits	2,590	5,589
Post-employment benefits	205	180
Share-based payment charge	158	-
Total remuneration of the directors	2,953	5,769

4. FINANCIAL INCOME AND EXPENSES

	2019 £'000	2018 £'000
Financial income		
Currency gains	5,940	-
Fair value gains from 1 month forward currency contracts (note 20)	76	-
Interest receivable	1,222	653
Total financial income	7,238	653
Financial expenses		
Net interest on pension schemes' liabilities (note 13)	845	1,249
Bank interest payable	57	338
Total financial expenses	902	1,587

Currency gains relates to revaluations of foreign currency denominated balances using latest reporting currency exchange rates. The gains recognised in 2019 largely relate to a depreciation of Sterling relative to the dollar affecting dollar denominated intragroup balances in the Company. In previous reporting periods, such movements were recognised in Administrative expenses (2018: £604,000 loss).

Certain intragroup balances were reclassified as 'net investments in foreign operations' on 3 December 2018, such that revaluations from currency movements on designated balances after this date accumulate in the Currency translation reserve in Equity. Additionally, from 1 January 2019, a policy of entering rolling one month forward currency contracts began, with fair value gains and losses being recognised in financial income, to offset currency movements on remaining intra group balances. See note 20 for further detail.

5. PROFIT BEFORE TAX

Included in the profit before tax are the following costs/(income):

	Notes	2019 £'000	2018 £'000
Depreciation and impairment of property, plant and equipment	(a)	23,752	26,140
Amortisation of intangible assets	(a)	16,662	14,625
Research and development expenditure	(b)	66,965	59,127
Research and development tax credit	(b)	(5,137)	(4,149)
Impairment of goodwill	(c)	-	1,559
Loss on sale of property, plant and equipment	(c)	148	37
Profit on sale of other intangibles	(c)	(455)	-
Auditor:			
Audit of these financial statements	(c)	226	199
Audit of subsidiary undertakings pursuant to legislation	(c)	329	266
Other assurance	(c)	4	4
All other non-audit fees	(c)	1	1

These costs/(income) can be found under the following headings in the Consolidated income statement:

(a) within cost of sales, distribution costs and administrative expenses; (b) within cost of sales; and (c) within administrative expenses.

6. EARNINGS PER SHARE

Basic and diluted earnings per share from continuing operations are calculated on earnings of £92,232,000 (2018: £132,342,000) and on 72,778,904 shares (2018: 72,788,543 shares), being the number of shares in issue. The 2019 number of shares excludes 9,639 shares held by the EBT, which were purchased on 10 December 2018.

Basic and diluted earnings and losses per share from discontinued operations for 2018 were calculated on losses of £582,000 and on 72,788,543 shares in issue.

There is no difference between the weighted average earnings per share and the basic and diluted earnings per share.

7. DISCONTINUED OPERATIONS

In October 2016, the Group decided to discontinue the operations of Renishaw Diagnostics Limited (healthcare segment) and in June 2017, to discontinue the spatial measurements business (metrology segment), on the basis of continued losses. Certain assets of the businesses were sold. Financial information relating to the discontinued operations is set out below:

	2019 £'000	2018 £'000
Revenue	-	4,326
Expenses	-	(3,664)
Goodwill impairment	-	-
Profit before tax	-	662
Tax charge	-	(80)
Profit for the year from discontinued operations	-	582

	2019 £'000	2018 £'000
Cash flow		
Profit for the year	-	582
Adjustments for operating activities	-	(250)
Cash flows from operating activities	-	332
Cash flows from investing activities	-	-
Net Increase in cash and cash equivalents from discontinued operations	-	332

8. INCOME TAX EXPENSE

	2019 £'000	2018 £'000
Current tax:		
UK corporation tax on profits for the year	4,691	10,806
UK corporation tax – prior year adjustments	(622)	(411)
Overseas tax on profits for the year	11,980	16,142
Total current tax	16,049	26,537
Deferred tax:		
Origination and reversal of temporary differences	2,719	(2,548)
Prior year adjustments	(882)	(665)
Recognition of previously unrecognised tax losses	(55)	(1,855)
Effect on deferred tax for changes in tax rates	(119)	1,401
	1,663	(3,667)
Tax charge on profit	17,712	22,870

	2019 £'000	2018 £'000
Total tax charge:		
Income tax expense reported in the Consolidated income statement	17,712	22,870
Tax attributable to discontinued operations	-	80
	17,712	22,950

The tax for the year is lower (2018: lower) than the UK standard rate of corporation tax of 19% (2018: 19%).
The differences are explained as follows:

	2019 £'000	2018 £'000
Profit before tax from continuing operations	109,944	155,225
Profit before tax from discontinued operations	-	662
Total profit before tax	109,944	155,887
Tax at 19% (2018: 19%)	20,889	29,619
Effects of:		
Different tax rates applicable in overseas subsidiaries	(124)	(849)
UK patent box	(1,787)	(5,678)
Expenses not deductible for tax purposes	583	672
Companies with unrelieved tax losses	231	448
Share of profits of associates and joint ventures	(631)	(534)
Items with no tax effect	(203)	195
Prior year adjustments	(1,504)	(283)
Effect on deferred tax for change in tax rates	(119)	1,401
Recognition of previously unrecognised tax losses	(55)	(1,855)
Recognition of previously unrecognised deductible temporary differences	-	(767)
Other differences	432	581
Tax charge on profit	17,712	22,950
Effective tax rate	16.1%	14.7%

The Group's future effective tax rate (ETR) will mainly depend on the geographic mix of profits and whether there are any changes to tax legislation in the Group's most significant countries of operations. The UK patent box benefit has a significant impact on the ETR and is unpredictable due to factors such as currency rate movements, trading profits in the Company and the level of capital allowances claimed in any given year. The fall of £3,891,000 in the patent box benefit is the primary driver for the increase in the ETR for 2019.

Deferred tax assets and liabilities have been calculated at the rate expected to be applicable when the relevant item reverses. A reduction in the UK rate of corporation tax to 17% (from 1 April 2020) has previously been substantively enacted and will have further impact on the ETR in future years.

The Group is not materially impacted by the changes to the international tax landscape resulting from the package of measures developed under the OECD base erosion and profit shifting project.

9. DEFERRED TAX ASSETS AND LIABILITIES

Balances at the end of the year were:

	2019			2018		
	Assets £'000	Liabilities £'000	Net £'000	Assets £'000	Liabilities £'000	Net £'000
Property, plant and equipment	184	(13,265)	(13,081)	184	(8,896)	(8,712)
Intangible assets	-	(2,494)	(2,494)	17	(3,456)	(3,439)
Intragroup trading (inventory)	16,686	-	16,686	17,394	-	17,394
Intragroup trading (fixed assets)	2,309	-	2,309	2,322	-	2,322
Defined benefit pension schemes	8,526	-	8,526	11,233	(138)	11,095
Derivatives	8,816	-	8,816	5,410	-	5,410
Tax losses	3,255	-	3,255	1,855	-	1,855
Other	5,927	(628)	5,299	1,330	(15)	1,315
Balance at the end of the year	45,703	(16,387)	29,316	39,745	(12,505)	27,240

The movements in the deferred tax balance during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	27,240	25,271
IFRS 15 transition adjustment	372	-
Reallocation from current tax	340	329
Movements in the Consolidated income statement	(1,663)	3,667
Movement in relation to the cash flow hedging reserve	4,561	(2,810)
Movement in relation to the defined benefit pension schemes	(1,534)	783
Total movement in the Consolidated statement of comprehensive income and expense	3,027	(2,027)
Balance at the end of the year	29,316	27,240

The deferred tax movement in the Consolidated income statement is analysed as:

	2019 £'000	2018 £'000
Property, plant and equipment	(4,369)	196
Intangible assets	945	891
Intragroup trading (inventory)	(708)	1,378
Intragroup trading (fixed assets)	(13)	1,383
Defined benefit pension schemes	(1,036)	(712)
Derivatives	(1,155)	(1,927)
Tax losses	1,400	1,855
Other	3,273	603
Total movement for the year	(1,663)	3,667

A US deferred tax net asset of £6,007,000 is recognised in respect of losses and other temporary differences. The US business has generated losses in the current and prior period. It is considered likely that the business will generate sufficient future taxable profits to recognise the deferred tax net asset in full, as product lines which have been introduced in recent years are expected to contribute greater returns.

Deferred tax assets have not been recognised in respect of tax losses carried forward of £21,028,000 (2018: £21,809,000), of which approximately half are time limited, due to uncertainty over their offset against future taxable profits and therefore their recoverability.

Deferred tax assets and liabilities are offset where there is a legally enforceable right of offset and there is an intention to net settle the balances. After taking these offsets into account, the net position of £29,316,000 asset (2018: £27,240,000 asset) is presented as a £29,855,000 deferred tax asset (2018: £27,428,000 asset) and a £539,000 deferred tax liability (2018: £188,000 liability) in the Group's consolidated balance sheet. Where deferred tax assets are recognised, the directors are of the opinion, based on recent and forecast trading, that the level of profits in current and future years make it more likely than not that these assets will be recovered.

10. PROPERTY, PLANT AND EQUIPMENT

Year ended 30 June 2019	Freehold land and buildings £'000	Plant and equipment £'000	Motor vehicles £'000	Assets in the course of construction £'000	Total £'000
Cost					
At 1 July 2018	174,156	218,018	9,736	6,800	408,710
Additions	19,603	27,596	903	8,690	56,792
Transfers	2,846	3,886	-	(6,732)	-
Disposals	(1,520)	(6,016)	(1,241)	-	(8,777)
Currency adjustment	2,389	1,543	157	-	4,089
At 30 June 2019	197,474	245,027	9,555	8,758	460,814
Depreciation					
At 1 July 2018	30,776	138,576	6,801	-	176,153
Charge for the year	741	20,701	1,155	-	22,597
Impairment	-	1,155	-	-	1,155
Released on disposals	(106)	(2,628)	(1,182)	-	(3,916)
Currency adjustment	482	763	103	-	1,348
At 30 June 2019	31,893	158,567	6,877	-	197,337
Net book value					
At 30 June 2019	165,581	86,460	2,678	8,758	263,477
At 30 June 2018	143,380	79,442	2,935	6,800	232,557

At 30 June 2019, properties with a net book value of £75,200,000 (2018: £66,759,000) were subject to a fixed charge to secure the UK defined benefit pension scheme liabilities.

Additions to assets in the course of construction of £8,690,000 (2018: £7,122,000) comprise £5,806,000 (2018: £3,034,000) for freehold land and buildings and £2,884,000 (2018: £4,088,000) for plant and equipment.

Year ended 30 June 2018	Freehold land and buildings £'000	Plant and equipment £'000	Motor vehicles £'000	Assets in the course of construction £'000	Total £'000
Cost					
At 1 July 2017	165,661	201,022	9,893	8,222	384,798
Additions	4,516	21,853	1,361	7,122	34,852
Transfers	6,340	2,204	-	(8,544)	-
Disposals	(1,115)	(6,580)	(1,409)	-	(9,104)
Currency adjustment	(1,246)	(481)	(109)	-	(1,836)
At 30 June 2018	174,156	218,018	9,736	6,800	408,710
Depreciation					
At 1 July 2017	28,462	121,611	6,675	-	156,748
Charge for the year	3,181	21,545	1,414	-	26,140
Released on disposals	(644)	(4,320)	(1,213)	-	(6,177)
Currency adjustment	(223)	(260)	(75)	-	(558)
At 30 June 2018	30,776	138,576	6,801	-	176,153
Net book value					
At 30 June 2018	143,380	79,442	2,935	6,800	232,557
At 30 June 2017	137,199	79,411	3,218	8,222	228,050

11. INTANGIBLE ASSETS

Year ended 30 June 2019	Goodwill on consolidation £'000	Other intangible assets £'000	Internally generated development costs £'000	Software licences and Intellectual property £'000	Total £'000
Cost					
At 1 July 2018	19,763	11,795	131,951	24,658	188,167
Additions	-	2,014	18,091	2,147	22,252
Disposals	-	-	-	(6,000)	(6,000)
Currency adjustment	464	14	-	22	500
At 30 June 2019	20,227	13,823	150,042	20,827	204,919
Amortisation					
At 1 July 2018	8,220	11,256	93,810	20,370	133,656
Charge for the year	-	18	15,144	1,500	16,662
Released on disposal	-	-	-	(4,455)	(4,455)
Currency adjustment	-	(14)	-	14	-
At 30 June 2019	8,220	11,260	108,954	17,429	145,863
Net book value					
At 30 June 2019	12,007	2,563	41,088	3,398	59,056
At 30 June 2018	11,543	539	38,141	4,288	54,511

Year ended 30 June 2018	Goodwill on consolidation £'000	Other intangible assets £'000	Internally generated development costs £'000	Software licences and intellectual property £'000	Total £'000
Cost					
At 1 July 2017	19,919	11,647	117,349	23,066	171,981
Additions	-	104	14,602	1,596	16,302
Currency adjustment	(156)	44	-	(4)	(116)
At 30 June 2018	19,763	11,795	131,951	24,658	188,167
Amortisation					
At 1 July 2017	6,661	11,187	81,327	18,299	117,474
Charge for the year	-	69	12,483	2,073	14,625
Impairments	1,559	-	-	-	1,559
Currency adjustment	-	-	-	(2)	(2)
At 30 June 2018	8,220	11,256	93,810	20,370	133,656
Net book value					
At 30 June 2018	11,543	539	38,141	4,288	54,511
At 30 June 2017	13,258	460	36,022	4,767	54,507

Goodwill acquired has arisen on the acquisition of a number of businesses and has an indeterminable useful life. Therefore it is not amortised but is tested for impairment annually and at any point during the year when an indicator of impairment exists. Goodwill is allocated to the cash generating units (CGUs), which are mainly the statutory entities acquired. This is the lowest level in the Group at which goodwill is monitored for impairment and is at a lower level than the Group's operating segments. In the following table, only the goodwill relating to the acquisition of Renishaw Fixturing Solutions, LLC is expected to be subject to tax relief.

The analysis of acquired goodwill on consolidation is:

	2019 £'000	2018 £'000
itp GmbH	3,092	3,065
Renishaw Mayfield S.A.	1,930	1,725
Renishaw Fixturing Solutions, LLC	5,453	5,247
Other smaller acquisitions	1,532	1,506
Total acquired goodwill	12,007	11,543

The recoverable amounts of acquired goodwill are based on value in use calculations. These calculations use cash flow projections based on either the financial business plans approved by management for next five financial years, or estimated growth rates over the five years, which are set out below. The cash flows beyond this forecast are extrapolated to perpetuity using a nil growth rate on a prudent basis, to reflect the uncertainties over forecasting further than five years.

Rate applied to key assumptions

The rates applied to key assumptions utilised in the value in use calculations are:

Discount rates

The following pre-tax discount rates have been used in discounting the projected cash flows:

	2019 Discount rate	2018 Discount rate
itp GmbH	12%	12%
Renishaw Fixturing Solutions, LLC	12%	12%
Renishaw Mayfield S.A.	15%	15%

Forecast cash flows and future growth rates	2019 Basis of forecast	2018 Basis of forecast
itp GmbH	5 % growth rate	5 % growth rate
Renishaw Fixturing Solutions, LLC	5 year business plan	5 year business plan
Renishaw Mayfield S.A.	5 year business plan	5 year business plan

These forecast cash flows are considered prudent estimates based on management's view of the future and experience of past performance of the individual CGUs and are calculated at a disaggregated level. The key judgement within these business plans is the forecasting of revenue growth, given that the cost bases of the businesses can be flexed in line with revenue performance.

The average growth rates included in the significant CGUs' business plans are as follows

	2019 Average revenue growth	2018 Average revenue growth
Renishaw Fixturing Solutions, LLC	20%	20%

These business plans are recognised as key inputs to the impairment calculation. They are monitored by management regularly and updated for expected variances in future performance.

Sensitivity to key assumptions

Management have performed sensitivity analysis on the key assumptions detailed above.

Discount rate

An increase of 5% in the discount rate would not result in an impairment on any of the CGUs. Management believe the likelihood of any increase in discount rates above 5% to be remote.

Forecast cash flows and future growth rates

Given the average revenue growth assumptions included in the five-year business plans, management's sensitivity analysis involves a reduction of 10% in the forecast cash flows utilised in those business plans and therefore into perpetuity. For there to be an impairment there would need to be a reduction of 70% for Renishaw Fixturing Solutions, LLC. Management deem the likelihood of this reduction to be remote.

12. INVESTMENT IN ASSOCIATES AND JOINT VENTURES

The Group's investments in associates and joint ventures (all investments being in the ordinary share capital of the associate and joint ventures), whose accounting years end on 30 June, except where noted otherwise, were:

	Country of incorporation & principal place of business	Ownership 2019 %	Ownership 2018 %
RLS Merilna tehnika d.o.o.	Slovenia	50.0	50.0
Metrology Software Products Limited	England & Wales	50.0	50.0
HiETA Technologies Limited (31 December)	England & Wales	24.9	24.9

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	9,822	7,311
Dividends received	(614)	(507)
Share of profits of associates and joint ventures	3,815	2,970
Other comprehensive income and expense	72	48
Balance at the end of the year	13,095	9,822

The Group has recognised its share of losses in its associate in its share of profits of associates and joint ventures reported above to the extent of its interest in the associate.

Summarised aggregated financial information for associates and joint ventures:

	Joint ventures		Associate	
	2019	2018	2019	2018
	£'000	£'000	£'000	£'000
Assets	30,570	23,567	3,083	2,114
Liabilities	(5,180)	(4,722)	(8,669)	(5,720)
Net assets/(liabilities)	25,390	18,845	(5,586)	(3,606)
Group's share of net assets/(liabilities)	12,695	9,423	(1,391)	(868)
Revenue	26,886	23,414	1,032	816
Profit/(loss) for the year	7,630	6,442	(1,980)	(1,655)
Other comprehensive income and expense	144	96	-	-
Total comprehensive income and expense for the year	7,774	6,538	(1,980)	(1,655)
Group's share of profit/(loss) for the year	3,815	3,221	(493)	(251)
Group's share other comprehensive income and expense	72	48	-	-
Group's share of total comprehensive income and expense for the year	3,887	3,269	(493)	(251)

13. EMPLOYEE BENEFITS

The Group operates a number of pension schemes throughout the world. As noted in the accounting policies, actuarial valuations of foreign pension schemes are not obtained for the most part because of the limited number of members. The major scheme, which covers qualifying UK-based employees, is of the defined benefit type. This scheme, along with the Ireland and USA defined benefit pension schemes, has ceased any future accrual for current members and these schemes are closed to new members. UK, Ireland and USA employees are now covered by defined contribution schemes.

The total pension cost of the Group for the year was £22,701,000 (2018: £21,127,000), of which £205,000 (2018: £180,000) related to directors and £6,440,000 (2018: £5,983,000) related to overseas schemes.

The latest full actuarial valuation of the UK defined benefit pension scheme was carried out as at 30 September 2018 and updated to 30 June 2019 by a qualified independent actuary. The mortality assumption used for 2019 is S2PMA and S2PFA tables, CMI (core) 2018 model with long-term improvements of 1% per annum. Major assumptions used by the actuary for the UK and Ireland schemes were:

	30 June 2019		30 June 2018		30 June 2017	
	UK scheme	Ireland scheme	UK scheme	Ireland scheme	UK scheme	Ireland scheme
Rate of increase in pension payments	3.3%	1.5%	3.3%	2.0%	3.3%	1.6%
Discount rate	2.3%	1.2%	2.8%	1.9%	2.7%	2.2%
Inflation rate (RPI)	3.4%	1.5%	3.4%	2.0%	3.4%	1.6%
Inflation rate (CPI)	2.4%	-	2.4%	-	2.4%	-
Retirement age	64	65	64	65	64	65

The life expectancies implied by the mortality assumption at age 65 are:

	2019 years	2018 years
Male currently aged 65	21.3	21.8
Female currently aged 65	23.2	23.7
Male currently aged 45	22.3	22.8
Female currently aged 45	24.4	24.9

The weighted average duration of the defined benefit obligation is around 24 years.

The assets and liabilities in the defined benefit schemes at the end of the year were:

	30 June 2019 £'000	% of total assets	30 June 2018 £'000	% of total assets
Market value of assets:				
Equities	111,209	61	107,982	62
Multi-asset funds	64,708	36	61,232	35
Bonds	3,135	2	2,759	2
Cash and other	2,536	1	869	1
	181,588	100	172,842	100
Actuarial value of liabilities	(233,458)	-	(240,220)	-
Deficit in the schemes	(51,870)	-	(67,378)	-
Deferred tax thereon	8,526	-	11,096	-

All equities are held in externally-managed funds and primarily relate to UK and US equities. Bonds relate to UK and Eurozone government-linked securities, again held in externally-managed funds and to which the majority relates to the UK. The fair values of these equity and fixed income instruments are determined using the bid price of the unlisted investments, quoted by the investment manager, at the reporting date and therefore represent 'Level 2' of the fair value hierarchy defined in note 20.

Multi-asset funds are also held in externally-managed funds, with active asset allocation to diversify growth across asset classes such as equities, bonds and money-market instruments. The fair value of these funds is determined on a comparable basis to the equity and fixed income funds, and therefore are also 'Level 2' assets. No scheme assets are directly invested in the Group's own equity.

For the UK scheme, the investment strategy is determined by the trustees and has been set in agreement with the Company. The main investment objective is to ensure that benefits payable to members are paid as they fall due. Currently, the scheme is considered to be relatively immature and therefore the focus of the investment strategy is growth. The strategy is to hold 64% of the assets in equities; 35% in Diversified Growth Funds; and 1% in index-linked gilts. The actual allocations measured at fair value may vary from this due to market price movements and intervals between rebalancing the portfolio. The Company and trustees are discussing strategies for reducing investment risk as and when appropriate.

The movements in the schemes' assets and liabilities were:

	Assets £'000	Liabilities £'000	Total £'000
Year ended 30 June 2019			
Balance at the beginning of the year	172,842	(240,220)	(67,378)
Contributions paid	6,831	-	6,831
Interest on pension schemes	4,902	(5,747)	(845)
Remeasurement loss from GMP equalisation	-	(751)	(751)
Remeasurement gain under IAS 19 and IFRIC 14	4,219	6,054	10,273
Benefits paid	(7,206)	7,206	-
Balance at the end of the year	181,588	(233,458)	(51,870)
	Assets £'000	Liabilities £'000	Total £'000
Year ended 30 June 2018			
Balance at the beginning of the year	170,708	(237,495)	(66,787)
Contributions paid	4,471	-	4,471
Interest on pension schemes	4,573	(5,822)	(1,249)
Remeasurement gain/(loss) under IAS 19 and IFRIC 14	5,979	(9,792)	(3,813)
Benefits paid	(12,889)	12,889	-
Balance at the end of the year	172,842	(240,220)	(67,378)

The analysis of the amount recognised in the Consolidated statement of comprehensive income and expense was:

	2019 £'000	2018 £'000
Actuarial gain/(loss) arising from:		
- Changes in demographic assumptions	2,937	1,533
- Changes in financial assumptions	(22,941)	556
- Experience adjustment	(4,677)	2,601
Return on plan assets excluding interest income	3,454	6,797
Adjustment to liabilities for IFRIC 14	31,500	(15,300)
Total amount recognised in the consolidated statement of comprehensive income and expense	10,273	(3,813)

The cumulative amount of actuarial gains and losses recognised in the Consolidated statement of comprehensive income and expense was a loss of £100,804,000 (2018: loss of £111,077,000).

The total deficit of the Group's defined benefit pension schemes, on an IAS 19 basis (excluding any adjustments for IFRIC 14), has increased from £35,878,000 at 30 June 2018 to £51,870,000 at 30 June 2019, primarily as a result of a reduction of in the UK scheme discount rate from 2.8% to 2.3%. The latest actuarial report prepared in September 2018 shows a deficit of £70,700,000, which is based on funding to self sufficiency and uses prudent assumptions. IAS 19 requires best estimate assumptions to be used, resulting in the IAS 19 deficit being lower than the actuarial deficit.

For the UK defined benefit scheme, a guide to the sensitivity of the value of the respective liabilities is as follows:

	Variation	Approximate effect on liabilities
UK – discount rate	Increase/decrease by 0.5%	-£21.0m/+£24.3m
UK – future inflation	Increase/decrease by 0.5%	+£18.1m/-£18.8m
UK – mortality	Increased life by one year	+£9.5m
UK – early retirement	One year earlier than assumed	+£5.9m

Following engagement with The Pensions Regulator, the Company and trustees have agreed the terms of a new deficit funding plan for the UK defined benefit pension scheme which supersedes all previous arrangements. The Company has agreed to pay £8,700,000 per annum into the scheme for five years with effect from 1 October 2018. Under the terms of the previous agreement the Company paid all monthly pensions payments and lump sum payments, and transfer payments up to a limit of £1,000,000 in each year. Under the new agreement, all such payments will be met by the scheme.

A number of UK properties owned by the Company with a book value of £75,200,000 at 30 June 2019 are subject to registered fixed charges and will continue to provide security to the scheme under the new plan. The Company also has an escrow bank account with a balance of £10,490,000 at the end of the year (2018: £10,413,000) which is subject to a registered floating charge. Under the previous plan, the funds were to be released back to the Company over a period of five years. There is no scheduled release of funds back to the Company under the new plan.

In the event a subsequent actuarial valuation results in the combined value of the properties and the escrow bank account exceeding 120% of the actuarial deficit, some of the contingent assets will be released back to the Company. Any remaining contingent assets will be released from charge when the deficit no longer exists.

In line with the previous agreement, the new agreement will continue until 30 June 2031 and any outstanding deficit paid at that time. The agreement will end sooner if the actuarial deficit (calculated on a self-sufficiency basis) is eliminated in the meantime.

The charges may be enforced by the trustees if one of the following occurs: (a) the Company does not pay funds into the scheme in line with the agreed plan; (b) an insolvency event occurs in relation to the Company; or (c) the Company does not pay any deficit at 30 June 2031.

The value of the guaranteed payments under the new plan is lower than the IAS 19 pension scheme deficit at 30 June 2019 and as such, in accordance with IFRIC 14, no adjustment to the scheme's liabilities has been necessary. At 30 June 2018, the increase in liabilities under IFRIC 14 was £31,500,000.

Under the Ireland defined benefit pension scheme deficit funding plan, a property owned by Renishaw (Ireland) Designated Activity Company is subject to a registered fixed charge to secure the Ireland defined benefit pension scheme's deficit.

On 26 October 2018, the High Court reached a judgment in relation to Lloyds Banking Group's defined benefit pension schemes which concluded that the schemes should be amended to equalise pension benefits for men and women as regards guaranteed minimum pension benefits. The issues determined by the judgment arise in

relation to most other defined benefit pension schemes and are relevant to the Company's UK defined benefit pension scheme. Following discussions between the Company, the trustees and their respective advisors, we have estimated incremental liabilities to be £751,000, which have been recognised in the Consolidated income statement in Administrative expenses. The estimate has increased the scheme's liabilities by 0.4% and is based on the C2 method which has been approved by the courts and likely to be the most commonly used approach. The Company and Trustees along with their respective advisors continue to assess the most appropriate method to achieve the equalisation of benefits.

14. SHARE-BASED PAYMENTS

Deferred annual equity incentive plan

In accordance with the remuneration policy approved by shareholders at the 2017 AGM, the deferred annual equity incentive plan (the Plan) was implemented in relation to the financial year ending 30 June 2018. The 20 July 2018 Remuneration Committee meeting recommended plan rules that were adopted by a resolution of the Board on 24 July 2018. The Committee also approved the grant of awards under the Plan to the participating Executive Directors.

The number of shares to be awarded is calculated by dividing the relevant amount of annual bonus under the Plan by the average price of a share during a period determined by the Committee of not more than five dealing days ending with the dealing day before the award Date. These shares must be purchased on the open market and cannot be satisfied by issuance of new shares or transfer of existing treasury shares.

An employee benefit trust (EBT) has been set up to purchase and hold such shares, until transferring to the employees, which will normally be on the third anniversary of the award date, subject to continued employment. Malus and clawback provisions can be operated by the Committee within five years of the award date. During the vesting period, no dividends are payable on the shares. However, upon vesting, employees will be entitled to additional shares or cash, equivalent to the value of dividends paid on the awarded shares during this period.

The total cost recognised in the 2019 Consolidated income statement in respect of the Plan was £157,523 (2018: nil). No awards have been awarded in respect of 2019.

15. CASH AND CASH EQUIVALENTS

An analysis of cash and cash equivalents at the end of the year was:

	2019 £'000	2018 £'000
Bank balances and cash in hand	49,897	63,417
Short-term deposits	56,929	40,430
Balance at the end of the year	106,826	103,847

The UK defined benefit pension scheme cash escrow account is shown separately within assets. £52,500,000 of the Group short-term deposits balance is held in the Company, with £12,500,000, £20,000,000 and £20,000,000 maturing on 19 July 2019, 14 October 2019 and 6 April 2020 respectively.

16. INVENTORIES

An analysis of inventories at the end of the year was:

	2019 £'000	2018 £'000
Raw materials	46,102	28,094
Work in progress	23,431	29,193
Finished goods	59,493	53,276
Balance at the end of the year	129,026	110,563

During the year, the amount of inventories recognised as an expense in the Consolidated income statement was £185,344,000 (2018: £187,834,000) and the amount of write-down of inventories recognised as an expense in the Consolidated income statement was £1,276,000 (2018: £1,711,000). At the end of the year, the gross cost of inventories which had provisions held against them totalled £14,137,000 (2018: £14,126,000).

17. PROVISIONS

Warranty provision

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	3,453	2,960
Created during the year	2,236	2,775
Utilised in the year	(2,843)	(2,282)
	(607)	493
Balance at the end of the year	2,846	3,453

The warranty provision has been calculated on the basis of historical return-in-warranty information and other internal reports. It is expected that most of this expenditure will be incurred in the next financial year and all expenditure will be incurred within three years of the balance sheet date.

18. OTHER PAYABLES

Balances at the end of the year were:

	2019 £'000	2018 £'000
Payroll taxes and social security	7,333	7,297
Other creditors and accruals	33,732	40,682
Total other payables	41,065	47,979

Other creditors and accruals include decreases in the Group bonuses payable. The Group's exposure to currency and liquidity risk related to trade and other payables is disclosed in note 20.

19. BORROWINGS

Third party borrowings at 30 June 2019 amounted to £10,399,000. This relates to a five year loan entered into on 31 May 2019 by Renishaw KK, with original principal of JPY 1,447,000,000 (£10,486,000).

For the period 31 May 2019 to 31 July 2019, principal of JPY 12,000,000 is repayable each month, with a variable interest rate of TIBOR +0.32% also paid on monthly accretion. For the period 31 July 2019 to 31 May 2024, principal of JPY 12,000,000 is repayable each month, with a fixed interest rate of 0.81% also paid on monthly accretion.

The remaining principal at 31 May 2024 of JPY 739,000,000 can either be repaid in full at that time, or extended for another five years.

Borrowings are held at amortised cost. There is no difference between the book value and fair value of borrowings, which is estimated by discounting contractual future cash flows, which represents 'Level 2' of the fair value hierarchy defined in note 20.

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	-	-
Additions	10,486	-
Interest	3	-
Repayments	(90)	-
Currency	-	-
Balance at the end of the year	10,399	-

20. FINANCIAL INSTRUMENTS

The Group has exposure to credit risk, liquidity risk and market risk arising from its use of financial instruments. This note presents information about the Group's exposure to these risks, along with the Group's objectives, policies and processes for measuring and managing the risks.

Fair value

There is no significant difference between the fair value of financial assets and financial liabilities and their carrying value in the Consolidated balance sheet. All financial assets and liabilities are held at amortised cost, apart from the forward exchange contracts, which are held at fair value, with changes going through the Consolidated income statement unless subject to hedge accounting.

The fair values of the forward exchange contracts have been calculated by a third party expert, discounting estimated future cash flows on the basis of market expectations of future exchange rates, representing level 2 in the IFRS 13 fair value hierarchy. The IFRS 13 level categorisation relates to the extent the fair value can be determined by reference to comparable market values. The classifications are: level 1 where instruments are quoted on an active market; level 2 where the assumptions used to arrive at fair value have comparable market data; and level 3 where the assumptions used to arrive at fair value do not have comparable market data.

Credit risk

The Group's liquid funds are substantially held with banks with high credit ratings and the credit risk relating to these funds is therefore limited. The Group carries a credit risk relating to non-payment of trade receivables by its customers. Credit evaluations are carried out on all new customers before credit is given above certain thresholds. There is a spread of risks among a large number of customers with no significant concentration with one customer or in any one geographical area. The Group establishes an allowance for impairment in respect of trade receivables where recoverability is considered doubtful.

An analysis by currency of the Group's financial assets at the year end is as follows:

Currency	Trade receivables		Other receivables		Cash	
	2019 £'000	2018 £'000	2019 £'000	2018 £'000	2019 £'000	2018 £'000
Pound Sterling	10,628	7,917	12,704	11,466	64,919	67,649
US Dollar	38,724	76,139	935	1,034	7,666	7,693
Euro	29,516	25,944	4,120	3,540	7,846	10,005
Japanese Yen	18,087	20,463	740	691	3,966	4,516
Other	26,196	24,124	5,962	5,257	22,429	13,984
	123,151	154,587	24,461	21,988	106,826	103,847

The above trade receivables, other receivables and cash are predominately held in the functional currency of the relevant entity, with the exception of £20,262,000 of US Dollar denominated trade receivables being held in Renishaw (Hong Kong) Limited and £6,109,000 of Euro-denominated trade receivables being held in Renishaw UK Sales Limited, along with some foreign currency cash balances which are of a short-term nature.

The ageing of trade receivables past due, but not impaired, at the end of the year was:

	2019 £'000	2018 £'000
Past due 0-1 month	14,999	21,620
Past due 1-2 months	4,438	6,111
Past due more than 2 months	16,486	6,388
Balance at the end of the year	35,923	34,119

Movements in the provision for impairment of trade receivables during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	3,301	3,115
Changes in amounts provided	292	525
Amounts utilised	(512)	(339)
Balance at the end of the year	3,081	3,301

The above provision includes an element of impairment against the net debtor position using a provision matrix to measure expected credit losses, according to IFRS 9. The provision rates are based on historic rates of default, being 0.14% of trade receivables.

The maximum exposure to credit risk is £265,171,000, comprising the Group's trade and other receivables, cash and cash equivalents and derivative assets.

The maturities of non-current other receivables, being long-term loans to associates and joint ventures and derivatives, at the year end were:

	2019 £'000	2018 £'000
Receivable between 1 and 2 years	1,075	232
Receivable between 2 and 5 years	1,485	11,240
	2,560	11,472

Liquidity risk

The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, without incurring unacceptable losses or risking damage to the Group's reputation. The Group uses monthly cash flow forecasts to monitor cash requirements.

In respect of net cash, the carrying value approximates to fair value because of the short maturity of the deposits. A significant proportion of net cash is affected by interest rates that are either fixed or floating and based on LIBOR, which can change over time, affecting the Group's interest income. Of the net cash subject to floating interest rate charges, an increase of 1% in interest rates would result in an increase in interest income of approximately £220,000.

The contractual maturities of financial liabilities at the year end were:

	Carrying amount	Effect of discounting	Gross maturities	Contractual cash flows		
Year ended 30 June 2019	£'000	£'000	£'000	Up to 1 year £'000	1-2 years £'000	2-5 years £'000
Trade payables	21,513	-	21,513	21,513	-	-
Other payables	41,065	-	41,065	41,065	-	-
Borrowings	10,399	310	10,709	1,120	1,115	8,474
Forward exchange contracts	54,147	-	54,147	18,920	12,626	22,601
	127,124	310	127,434	82,618	13,741	31,075

	Carrying amount	Effect of discounting	Gross maturities	Up to 1 year	1-2 years	2-5 years
Year ended 30 June 2018	£'000	£'000	£'000	£'000	£'000	£'000
Trade payables	25,232	-	25,232	25,232	-	-
Other payables	47,979	-	47,979	47,979	-	-
Borrowings	-	-	-	-	-	-
Forward exchange contracts	39,519	-	39,519	22,478	10,490	6,551
	112,730	-	112,730	95,689	10,490	6,551

Borrowings relate to a single loan in Renishaw KK, with a fixed interest rate of 0.81% for the majority of the loan contract. Interest is payable on accretion each month, along with monthly principal repayments. See note 19 for further detail.

Market risk

As noted under Principal risks and uncertainties (note 27), the Group operates in a number of foreign currencies with the majority of sales being made in these currencies, but with most manufacturing being undertaken in the UK, Ireland and India.

The Group enters into US Dollar, Euro and Japanese Yen derivative financial instruments to manage its exposure to foreign currency risk, including:

- Forward foreign currency exchange contracts to hedge a significant proportion of the Group's forecasted US Dollar, Euro and Japanese Yen revenues over the next three and a half years;
- Foreign currency option contracts, entered into alongside the forward contracts above until May 2018 as part of the Group revenue hedging strategy, are ineffective for cash flow hedging purposes. Note 25 'Alternative performance measures' gives an adjusted measure of profit before tax to reflect the original intention that these derivatives being for hedging purposes. The final option contract will mature in November 2021; and
- One-month forward foreign currency exchange contracts to offset the gains/losses from exchange rate movements arising from foreign currency denominated intragroup balances of the Company.

For both the Group and the Company, the following table details the fair value of these forward foreign currency derivatives according to their accounting treatment.

	2019 Nominal value £'000	Fair value £'000	2018 Nominal value £'000	Fair value £'000
Forward currency contracts in a designated cash flow hedge (i)				
Non-current derivative assets	36,152	319	241,930	6,562
Current derivative assets	37,060	340	-	-
Current derivative liabilities	198,339	(18,749)	197,285	(22,325)
Non-current derivative liabilities	671,442	(34,967)	401,817	(16,111)
	942,993	(53,057)	841,032	(31,874)
Amounts recognised in the Consolidated statement of comprehensive income and expense	-	(27,573)	-	14,470
Foreign currency options ineffective as a cash flow hedge (ii)				
Non-current derivative assets	-	991	-	3,016
Current derivative assets	-	2,365	-	1,368
Current derivative liabilities	-	(104)	-	(153)
Non-current derivative liabilities	-	(260)	-	(930)
	-	2,992	-	3,301
Amounts recognised in Gains from the fair value of financial instruments in the Consolidated income statement	-	1,081	-	4,834
Forward currency contracts not in a designated cash flow hedge (iii)				
Current derivative assets	26,671	73	-	-
Current derivative liabilities	19,463	(67)	-	-
	46,134	6	-	-
Amounts recognised in Financial income in the Consolidated income statement	-	76	-	-
Total forward contracts and options				
Non-current derivative assets	36,152	1,310	241,930	9,578
Current derivative assets	63,731	2,778	-	1,368
Current derivative liabilities	217,802	(18,920)	197,285	(22,478)
Non-current derivative liabilities	671,442	(35,227)	401,817	(17,041)
	989,126	(50,059)	841,032	(28,573)

The amounts of foreign currencies relating to these forward contracts and options are, in Sterling terms:

	2019 Nominal value £'000	Fair value £'000	2018 Nominal value £'000	Fair value £'000
USD	678,323	(43,689)	578,421	(22,836)
EUR	187,833	(3,501)	163,283	(6,879)
JPY	122,970	(2,868)	99,328	1,142
	989,126	(50,059)	841,032	(28,573)

The following are the exchange rates which have been applicable during the financial year.

Currency	2019 Average forward contract rates	2019 Year end exchange rate	2019 Average exchange rate	2018 Average forward contract rates	2018 Year end exchange rate	2018 Average exchange rate
USD	1.39	1.27	1.29	1.50	1.32	1.35
EUR	1.12	1.12	1.13	1.22	1.13	1.13
JPY	139	138	144	150	146	149

For the Group's foreign currency forward contracts and options at the balance sheet date, if Sterling appreciated by 5% against the US Dollar, Euro and Japanese Yen, this would increase pre-tax equity by £39,100,000 and decrease profit before tax by £300,000.

Hedging

In relation to the forward currency contracts in a designated cash flow hedge, the hedged item is a layer component of forecast sales transactions. Forecast transactions are deemed highly probable to occur and Group policy is to hedge at least 75% of net foreign currency exposure for USD, EUR and JPY. The hedged item creates an exposure to receive USD, EUR or JPY, while the forward contract is to sell USD, EUR or JPY and buy GBP. Therefore, there is a strong economic relationship between the hedging instrument and the hedged item. The hedge ratio is 100%, such that, by way of example, £10m nominal value of forward currency contracts are used to hedge £10m of forecast sales. Fair value gains or losses on the forward currency contracts are offset by foreign currency gains or losses on the translation of USD, EUR and JPY based sales revenue, relative to the forward rate at the date the forward contracts were arranged. Foreign currency exposures in HKD and USD are aggregated and only USD forward currency contracts are used to hedge these currency exposures. Sources of hedge ineffectiveness include: changes in timing of the hedged item; reduction in the amount of the hedged sales considered to be highly probable; a change in the credit risk of Renishaw or the bank counterparty to the forward contract; and differences in assumptions used in calculating fair value. For the year-end outstanding cash flow hedges, the change in fair value of the hedged item, being a £27,573,000 gain, is equal to the change in fair value of the forward currency hedge, being a £27,573,000 loss. No ineffectiveness has been recognised in the reporting period.

Capital management

The Group defines capital as being the equity attributable to the owners of the Company, which is captioned on the Consolidated balance sheet. The Board's policy is to maintain a strong capital base and to maintain a balance between significant returns to shareholders, with a progressive dividend policy, whilst ensuring the security of the Group is supported by a sound capital position. The Group may adjust dividend payments due to changes in economic and market conditions which affect, or are anticipated to affect, Group results.

21. SHARE CAPITAL AND RESERVES

Share capital

	2019 £'000	2018 £'000
Allotted, called-up and fully paid 72,788,543 ordinary shares of 20p each	14,558	14,558

The ordinary shares are the only class of share in the Company. Holders of ordinary shares are entitled to vote at general meetings of the Company and receive dividends as declared. The Articles of Association of the Company do not contain any restrictions on the transfer of shares nor on voting rights.

Dividends paid

Dividends paid comprised:

	2019 £'000	2018 £'000
2018 final dividend paid of 46.0p per share (2017: 39.5p)	33,483	28,752
Interim dividend paid of 14.0p per share (2018: 14.0p)	10,189	10,190
Total dividends paid	43,672	38,942

A final dividend in respect of the current financial year of £33,482,729 (2018: £33,482,729) at the rate of 46.0p net per share (2018: 46.0p) is proposed to be paid on 31 October 2019 to shareholders on the register on 27 September 2019.

Own shares held

The EBT is responsible for purchasing shares on the open market on behalf of the Company to satisfy the plan awards, see note 15 for further detail on this. Own shares held are recognised as an element in equity until they are transferred at the end of the vesting period.

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	-	-
Acquisition of own shares	(404)	-
Balance at the end of the year	(404)	-

On 10 December 2018, 9,639 shares were purchased on the open market by the EBT at a price of £41.66, costing a total of £404,348.

Currency translation reserve

The currency translation reserve comprises all foreign exchange differences arising from the translation of the financial statements of the foreign operations, offset by foreign exchange differences on bank liabilities which have been accounted for in Other comprehensive income and expense and accumulated in equity, on account of them being classified as hedging instruments. The policy to hedge net overseas assets was ended in December 2017. Movements in the currency translation reserve after this date therefore only arise from translation of financial statements of foreign operations and currency movements on intragroup loan balances classified as net investments in foreign operations from December 2018 (see note 4).

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	12,665	10,510
Gain on net assets of foreign currency operations	1,218	4,008
Loss on foreign currency overdrafts held for the purpose of net investment hedging	-	(1,901)
Gain on intragroup loans classified as net investments in foreign operations	827	-
Current tax on translation of net investments in foreign operations	(205)	-
Gain in the year relating to subsidiaries	1,840	2,107
Currency exchange differences relating to associates and joint ventures	72	48
Balance at the end of the year	14,577	12,665

Cash flow hedging reserve

The cash flow hedging reserve, for both the Group and the Company, comprises all foreign exchange differences arising from the valuation of forward exchange contracts which are effective hedges and mature after the year end. See note 20 for further detail on this. These are valued on a mark-to-market basis, are accounted for in Other comprehensive income and expense and accumulated in equity, and are recycled through the Consolidated income statement and Company income statement when the hedged item affects the income statement.

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	(19,389)	(31,049)
Losses on contract maturity recognised in revenue during the year	19,782	14,598
Gains transferred to the Consolidated income statement during the year	-	(4,834)
Deferred tax transferred to the consolidated income statement	-	1,927
Revaluations during the year	(47,355)	2,779
Deferred tax movement	4,561	(2,810)
Balance at the end of the year	(42,401)	(19,389)

Other reserve

The other reserve relates to additional investments in subsidiary undertakings and share-based payments charges according to IFRS 2 in relation to the Plan.

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	(460)	(460)
Share-based payments charge	158	-
Balance at the end of the year	(302)	(460)

Non-controlling interest

Movements during the year were:

	2019 £'000	2018 £'000
Balance at the beginning of the year	(577)	(590)
Share of profit for the year	-	13
Balance at the end of the year	(577)	(577)

The non-controlling interest represents the minority shareholdings in Renishaw Diagnostics Limited – 7.6%.

22. LEASES

Leases as lessee

The Group acts as lessee for land and buildings and vehicles in certain subsidiaries and recognises payments as an expense in the Consolidated income statement. The total of future minimum lease payments payable under non-cancellable operating leases were:

	2019		2018	
	Leasehold property £'000	Vehicles £'000	Leasehold property £'000	Vehicles £'000
Due in less than one year	3,338	1,442	3,363	1,329
Due between one and five years	5,211	2,309	4,929	2,988
Due in more than five years	4,090	-	4,019	354
Total future minimum lease payments payable	12,639	3,751	12,311	4,671

	2019		2018	
	Leasehold property £'000	Vehicles £'000	Leasehold property £'000	Vehicles £'000
Payments recognised in Consolidated income statement	3,904	1,536	3,799	1,409

Leases as lessor

The Group acts as lessor for Renishaw manufactured plant and equipment on both an operating and finance lease basis.

Operating leases

Where the Group retains the risks and rewards of ownership of leased assets, it continues to recognise the leased asset in property, plant and equipment, while the lease payments made during the term of the operating lease are recognised in revenue (2019: £1,231,000, 2018: £1,365,000). Operating leases are on one to five year terms. The total of future minimum lease payments receivable under non-cancellable operating leases were:

operating leases were:

	2019 £'000	2018 £'000
Receivable in less than one year	804	1,406
Receivable between one and five years	700	1,383
Total future minimum lease payments receivable	1,504	2,789

Finance leases

Where the Group transfers the risks and rewards of ownership of leased assets to a third party, the Group recognises a receivable in the amount of the net investment in the lease in Trade receivables. The lease receivable is subsequently reduced by the principal received, while an interest component is recognised as financial income in the Consolidated income statement. Standard contract terms are up to five years and there is a nominal residual value receivable at the end of the contract. The total future lease payments are split between the principal and interest amounts below:

	2019			2018		
	Gross investment £'000	Interest £'000	Net investment £'000	Gross investment £'000	Interest £'000	Net investment £'000
Receivable in less than one year	1,348	118	1,230	979	91	888
Receivable between one and five years	5,469	477	4,992	2,115	196	1,919
Total future minimum lease payments receivable	6,817	595	6,222	3,094	287	2,807

23. CAPITAL COMMITMENTS

Authorised and committed capital expenditure at the end of the year, for which no provision has been made in the Financial statements, was:

	2019 £'000	2018 £'000
Property	18,087	5,142
Plant and equipment	3,995	5,577
Other	280	136
Total committed capital expenditure	22,362	10,855

24. RELATED PARTIES

Associates, joint ventures and other related parties had the following transactions and balances with the Group:

	Joint ventures		Associate	
	2019 £'000	2018 £'000	2019 £'000	2018 £'000
Purchased goods and services from the Group during the year	908	923	2,970	577
Sold goods and services to the Group during the year	19,212	19,069	1	8
Paid dividends to the Group during the year	614	507	-	-
Amounts owed to the Group at the year end	167	118	2,481	314
Amounts owed by the Group at the year end	1,933	324	-	-
Loans owed to the Group at the year end	1,250	1,549	6,144	4,729

Of the loan to the associate party, £3,600,000 relates to a working capital loan agreement set up in March 2017 and extended by £500,000 in March 2018 and £1,000,000 in January 2019. £475,000 of the working capital loan is ring fenced for fixed asset capital expenditure. Interest is charged at 3.5% until 31 December 2019 and at 3% above the Bank of England rate thereafter. The loan is repayable on a three month notice with a repayment date no earlier than 31 December 2019.

There were no bad debts relating to related parties written off during the year (2018: £nil).

By virtue of their long-standing voting agreement, Sir David McMurtry (Executive Chairman 36.23% shareholder) and John Deer (Deputy Chairman, together with his wife, 16.80%), are the ultimate controlling party of the Group. The only significant transactions between the Group and these parties are in relation to their respective remuneration.

25. ALTERNATIVE PERFORMANCE MEASURES

APM's are - Revenue at constant exchange rates, Adjusted profit before tax, Adjusted earnings per share and Adjusted operating profit.

Revenue at constant exchange rates is defined as revenue recalculated using the same rates as were applicable to the previous year and excluding forward contract gains and losses.

	2019 £'000	2018 £'000
Revenue at constant exchange rates		
Statutory revenue as reported	573,959	611,507
Adjustment for forward contract losses	19,782	14,598
Adjustment to restate current year at previous year exchange rates	(10,346)	-
Revenue at constant exchange rates	583,395	626,105
Year on year revenue growth at constant exchange rates	-6.8%	-

Year-on-year revenue growth at constant exchange rates for 2018 was 17.7%.

Adjusted profit before tax, Adjusted earnings per share and Adjusted operating profit – These measures are defined as the profit before tax, earnings per share and operating profit after excluding gains and losses in fair value from the forward currency contracts which did not qualify for hedge accounting.

The gains or losses from fair value of financial instruments not effective for cash flow hedging have been excluded from statutory profit before tax, statutory earnings per share and statutory operating profit in arriving at Adjusted profit before tax, Adjusted earnings per share and Adjusted operating profit to reflect the Board's intent that the instruments would provide effective hedges.

The Board consider these APM's to be more relevant and reliable in evaluating the Group's performance.

The amounts shown below as reported in revenue represent the amount by which revenue would change had all the derivatives qualified as eligible for hedge accounting.

	2019 £'000	2018 £'000
Adjusted profit before tax:		
Statutory profit before tax	109,944	155,225
Fair value gains on financial instruments not eligible for hedge accounting:		
- reported in revenue	(5,001)	(5,310)
- reported in gains from the fair value in financial instruments	(1,081)	(4,834)
Adjusted profit before tax	103,862	145,081
	2019 pence	2018 pence
Adjusted earnings per share:		
Statutory earnings per share	126.7	181.8
Fair value gains on financial instruments not eligible for hedge accounting:		
- reported in revenue	(5.6)	(5.9)
- reported in gains in fair value in financial instruments	(1.2)	(5.4)
Adjusted earnings per share	119.9	170.5
	2019 pence	2018 pence
Adjusted operating profit:		
Statutory operating profit	99,793	153,189
Fair value gains on financial instruments not eligible for hedge accounting:		
- reported in revenue	(5,001)	(5,310)
- reported in gains in fair value in financial instruments	(1,081)	(4,834)
Adjusted operating profit	93,711	143,045
Adjustments to the segmental operating profit:		
	2019 £'000	2018 £'000
Metrology		
Operating profit before loss from fair value of financial instruments	95,345	147,841
Fair value gains on financial instruments not eligible for hedge accounting:		
- reported in revenue	(4,745)	(5,066)
Adjusted metrology operating profit	90,600	142,775
	2019 £'000	2018 £'000
Healthcare		
Operating profit before loss from fair value of financial instruments	3,367	514
Fair value gains on financial instruments not eligible for hedge accounting:		
- reported in revenue	(256)	(244)
Adjusted healthcare operating profit	3,111	270

26. IMPACT OF NEW ACCOUNTING POLICIES

Comparison to previous revenue recognition standard

As noted earlier in 'Changes to accounting policies' the Group now accounts for all volume rebates and early settlement discounts within Revenue rather than Cost of Sales. This reclassification, together with the net movement in deferred extended warranties referred to in note 1, accounts for the majority of the difference between the results for the period as reported under IFRS 15 and how they would have been reported under IAS 18.

Consolidated balance sheet extract	Balance at 30 June 2019 per IFRS 15 £'000	IFRS 15 adjustment £'000	Balance at 30 June 2019 per IAS 18 £'000
Assets			
Deferred tax assets	29,855	(429)	29,426
Contract assets	352	(352)	-
Liabilities			
Contract liabilities	5,631	(2,248)	3,383
Equity			
Retained earnings	597,784	1,467	599,251
related to current year		197	
Related to transition adjustment		1,270	
Consolidated income statement extract			
Revenue	573,959	1,644	575,603
Cost of sales	(294,969)	(1,390)	(296,359)
Gross profit	278,990	254	279,244
Profit before tax	109,944	254	110,198
Income tax expense	(17,712)	57	(17,655)
Profit for the year from continuing operations	92,232	197	92,429

Revenue recognised in 2019 that was included in the contract liability balance at the beginning of the reporting period, being £1,640,000, was £1,081,000. The remaining balance at 30 June 2019 relates to ongoing extended warranties and maintenance contracts.

27. PRINCIPAL RISKS AND UNCERTAINTIES

Our performance is subject to a number of risks – the principal risks and factors impacting on them are set out in the table below. The Board has conducted a robust assessment of the principal risks facing the business.

Area of risk	Description	Potential impact	Mitigation
Current trading levels and order book	Revenue growth is unpredictable and orders from customers generally involve short lead times with the outstanding order book at any time being around one month's worth of revenue value.	Global market conditions continue to highlight risks to growth and demand that can lead to fluctuating levels of revenue and profit. The potential impacts include those arising from Brexit and trade and tariff disputes resulting in an increased risk rating for this year. Future growth is difficult to predict, especially with such a short-term order book. This limited forward order visibility results in uncertainty in revenue and profit forecasts. If the Group does not manage its cost base and optimise operational efficiency, this may adversely impact profitability.	The Group is expanding and diversifying its product range in order to maintain a world-leading position in its sales of metrology products. Targeted investment in sales and marketing resources continues in order to support the breadth of the product offerings. The Group is applying its measurement expertise to grow its healthcare and additive manufacturing business activities. The Group retains a strong balance sheet and has the ability to flex manufacturing resource levels and shift patterns. The Group has implemented programmes in relation to the management of costs and with the aim of maximising profitability.

Research and development	The development of new products and processes involves risk, such as development timescales, meeting the required technical specification and the impact of alternative technology developments.	As a Group at the leading edge of new technology in metrology and healthcare, there are uncertainties whether all new R&D programmes will provide an economic return.	Patent and intellectual property generation are core to new product developments. R&D programmes are regularly reviewed against milestones and, when necessary, projects are suspended or cancelled. Medium-term to long-term R&D strategies are monitored regularly by both the Board and the Executive Board, including reviews of the allocation of R&D resource to key projects. Product development processes around the Group are reviewed and aligned where possible to provide consistency and efficiency. New products involve beta testing with customers to ensure as much as possible that they will meet the needs of the market. Market developments are closely monitored. Enhanced collaboration and knowledge-sharing between R&D teams.
Supply chain management	Customer deliveries may be threatened by a failure in the supply chain.	Inability to meet customer deliveries could result in loss of revenue and profit. Supply chain disruption caused by a no-deal Brexit with respect to customs and border clearances and uncertainty over UK and EU product approvals, which has given rise to an increased risk rating for this year.	Production facilities are maintained with fire and flood risk in mind. Critical production processes are replicated at different locations where practical. The Group is highly vertically integrated providing increased control over many aspects of the supply chain. The Group has the ability to flex manufacturing resource levels and shift patterns. Regular vendor reviews are performed for critical part suppliers. Stock policies are reviewed by the Board on a regular basis. Product quality is closely monitored. The Group has undertaken a review of the supply chain to identify key suppliers to ensure they have their own risk management process in place for a no-deal Brexit.

Regulation of healthcare	The Group's healthcare business involves a significant increase in compliance requirements to obtain regulatory approval prior to the sale of these products and the need to comply with the relevant legal and regulatory obligations.	Regulatory approval can be very expensive and time-consuming. This area is also very complex and there is a risk the correct approvals are not obtained. Failure to comply could have reputational and financial consequences for the Group. In a worst case no-deal Brexit scenario, a UK-based notified body can no longer CE mark a product for sale in the EU which would invalidate our current CE mark.	Specialist legal and regulatory expertise is in place to support the healthcare business. The Group has experience of healthcare regulatory matters at Board level. Healthcare operations in the UK and France have ISO13485 certification for their quality management systems, with Ireland and other subsidiary healthcare operations falling under the UK quality management system. Notified body for approving medical device products has been changed from BSi UK to the BSi Netherlands ensuring the Group will be able to keep valid certificates without interruption.
UK defined benefit pension scheme	Investment returns and actuarial valuations of the defined benefit pension scheme liability are subject to economic and social factors that are outside the control of the Group.	Volatility in investment returns and actuarial assumptions can significantly affect the defined benefit pension scheme deficit, impacting on future funding requirements.	The investment strategy is managed by the pension scheme trustees who operate in line with a statement of investment principles and take appropriate independent professional advice when necessary. A new recovery plan was agreed in June 2019 with the trustees in relation to the September 2018 actuarial deficit based on funding to self-sufficiency. This, combined with Company funding during the year, results in a decrease in the risk rating this year.
Exchange rate fluctuations	Fluctuating foreign exchange rates may affect the results of the Group.	With c.94% of revenue generated outside the UK, there is an exposure to major currency fluctuations, mainly in respect of the US Dollar, Euro and Japanese Yen. Such fluctuations could adversely impact both the Group's income statement and balance sheet. The potential impacts are likely to increase during periods of market uncertainty such as Brexit and trade and tariff disputes, which has given rise to an increased risk rating this year.	The Group enters into forward contracts in order to hedge varying proportions of forecast US Dollar, Euro and Japanese Yen revenue. Forward contracts which are ineffective for accounting purposes provide the protection against rate changes that management intended when entering the contracts. Currency rates and hedging position are regularly monitored.
Cyber security threats	For the Group to operate effectively it requires continuous access to timely and reliable	Reduced service to customers due to lack of reliable management information putting the	There is substantial resilience and back-up built into Group systems. Cyber risk and security is discussed

information at all times. We seek to ensure continuous availability, security and operation of information systems.	Group at a competitive disadvantage. Delay or impact on decision-making through lack of availability of sound data or disruption in/or denial of service. Loss of commercially sensitive and/or personal information leading to implications including reputational damage, claims or fines. Theft of commercial or sensitive information/data or fraud causing loss and disruption.	with the Board every six months. External penetration testing is utilised on an appropriate basis. The Group operates central IT policies in all aspects of information security. Regular monitoring of all Group systems takes place with regular reporting and analysis. Operating systems are continuously updated and refreshed in line with current threats. The Group employs a number of physical, logical and control measures to protect its information and systems. E-learning courses are rolled out as required to all employees on all cyber risks. The Group continues to focus on compliance with the General Data Protection Regulation and other existing and emerging data legislation.
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Workforce	Our people drive the success of our business. Inability to identify, attract, retain, develop and apply the critical capabilities and skills needed in appropriate numbers to effectively organise, deploy and incentivise our people would threaten the delivery of our strategic goals.	Not filling key roles, having a significantly changing workforce or not effectively deploying or organising the workforce could lead to delays in new products, quality issues, reduced sales levels, poor customer service and reduced profitability.	Attracting, rewarding and retaining people with the right skills globally in a planned and targeted way. Developing and enhancing organisational, leadership, technical and functional capability to deliver global programmes. An increased focus on individual development and succession planning, recognising the changing nature of careers and expectations at work. Incentivising and effectively deploying the critical capabilities, skills and people needed to deliver our strategic priorities, including benchmarking. Listening to our people and seeking to understand their views through active leadership and engagement including a new regular survey. Extensive apprentice, graduate and industrial placement programmes. Commitment to equality, diversity and inclusion.
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Financial calendar

Publication of 2019 Annual Report	21 August 2019
Annual General Meeting	24 October 2019
Half year results	January 2020
Trading update	May 2020

Final dividend

Ex-div date	26 September 2019
Record date	27 September 2019
Payment date	31 October 2019

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